

# COAL AGE

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No. 17

## A Call to Arms

America has grimly settled down to the task of making war. The Government, corporations and individuals have now shaped their courses to a definite goal. There is but a single aim—only one thought prevails—victory, and an early one.

In this country we have no ruined cities; we do not hear the guns; we have not tasted the blood of battle and shaken hands daily with the "grim reaper." The enemy has not even landed a few shells in one of our coast cities to stir us and fill our recruiting stations. We enter the war unmoved by drum and fife and the flare of battle. We have read about it, but except in a few cases we have not seen and felt it.

Americans have no feeling of personal revenge. There is no hatred of the German people. We propose to destroy a system, not a nation. Autocracy and democracy are going to the mat. The earth is to be free or not free. This will be the last war; America's entry assures that. And it is going to be mighty serious business. Monarchies die hard.

Germany is the greatest and most efficient business democracy on earth. Great Britain is the greatest political democracy, for the British are even a freer people than we Americans. The outcome of the war must be an exchange. Germany will give us her business freedom and make us industrially more effective, while we must give her people political liberty. This accomplished, and the war will have been worth the cost. Anything less, and it will have been a crime.

Each business must do its part. A "fuel board" will soon be acting in an advisory capacity to the coal and coke industries. Food and fuel are the two essentials to life and business. Each miner must load more coal. This means more hours per day and more days per year. There must be fewer holidays.

All coal companies should provide ground for gardens, and each employee should raise all the vegetables that his spare time will permit. Wives must cut out

waste wherever possible. This is to be a time of plainer food and plainer clothes. The young people in our mining towns must think less of fun and more of serious things. They can do a lot of good in the gardens, and it will not be such dull work either. Girls should be employed in offices wherever possible, and the men thus released can direct their efforts to more strenuous duties.

We must install every labor-saving device that can be put into operation, especially conveyors and loaders. Every effort must be productive; every motion must count. The period of this war must show such progress in invention that it will be known as the mechanical age. Who can surpass the Yankee? Let him live up to his reputation.

Start today—clean up your plant. Get every obstacle out of the way. Men cannot be efficient if they work in an office with dirty windows and unclean surroundings. Go over all your surface equipment. See that every defect is remedied. Get underground and see that roadways are clean, rails in shape, cars oiled, mining machines perfect, brattices tight, ventilation good and working places timbered and sprinkled. We are 3000 miles away, but we are going to reach across the sea and hit harder than any nation ever hit before. Do your part.

The price of coal is coming down. I talked last week with a cabinet officer in Washington, and I know whereof I speak. Any coal company that now attempts to profit unduly is an enemy to the industry of which it is a part. The Government does not ask that coal be sold at cost. It offers a fair profit to the producer. It proposes to regulate further, however, than for its own military and naval needs. Anyone who doubts this need only read with care Secretary Houston's national scheme for food control. Proposed legislation includes minimum and maximum food prices. Coal operators can prevent such drastic action with regard to fuels only by making such relief measures unnecessary. Farmers' organizations have assured the Government of support. The coal fraternity cannot afford to be less patriotic.

FLOYD W. PARSONS.

## Ideas and Suggestions

### Handy Prospecting Drill

BY T. EDWIN SMITH\*

I once had occasion, in Snake Valley, Alberta, to drill a hole to prospect a coal seam. In the course of the work I struck a stratum that was of unknown thickness and too hard for my augers to penetrate. Since the depth of the hole and the value of the work would not warrant the expense of hiring a machine, I rigged up the apparatus shown in the drawing.

I made the drill from a piece of 2-in. cold-rolled shafting with a piece of tool steel welded to its lower end for a cutting edge. A hole punched in the upper end enabled me to attach the rope by means of a small clevis.

The frame, or derrick, consisted of four poles each 16 ft. long. I bored a 1-in. hole through each pole about



ARRANGEMENT OF A CHEAP AND PRACTICAL DRILL

a foot from the small end and passed a  $\frac{3}{4}$ -in. iron rod through the four poles, placing a pulley between the center pair.

The rope from the drill passed over the pulley and down to the ground, where it was attached to a foot treadle. The treadle consisted of a 4 x 4-in. stake driven into the ground and a piece of 2 x 6 about 4 ft. long bolted at one end to the upper end of the stake and so arranged that it would swing in a vertical plane. At the other end was a hook with an opening smaller than the diameter of the rope. To attach the rope to the treadle I had merely to draw it up into the hook, where it held with sufficient firmness to enable me to lift the drill by pressing my foot down on the treadle. I also attached

a wooden handle to the down-coming portion of the drill rope, for turning the drill and to assist in lifting.

To operate the drill, I would push down on the foot treadle at the same time that I lifted on the handle, then take my foot off the treadle and bear down on the handle. I could lift a 60-lb. drill without difficulty by this method.

I also made a slush pump from a piece of 3-in. pipe 3 ft. long. I made a plug to fit the inside of the pipe, and after fitting it I bored a 1-in. hole through it. I cut a leather flap valve to fit over the hole in the plug and fastened it to the small end of the plug with  $\frac{5}{8}$ -in. shoe nails. I drove the plug into the pipe about 1 $\frac{1}{2}$  in. and sawed it off. I then stood the pipe in a barrel of water to swell the plug. The plug held as long as I used the drill, and is probably holding yet.

With this outfit I could drill holes to a considerable depth, and while it is not to be recommended for speed of drilling and ease of operation, it was a good one-man rig, being cheap and easily made.

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### Timber Measuring Devices

BY LOUIS A. REHFUSS AND W. C. REHFUSS\*

The method of measuring for stulls in the average mine is fraught with inaccuracy. It is usually done by means of a tape or a pair of sticks, and in many cases the result is that the stull will not fit without further trimming of the hitch or timber, even then it seldom fits right. In hard ground where it may take a half a day or longer to cut a pair of hitches it is worth while to employ any means that will insure an accurate fit and save time in

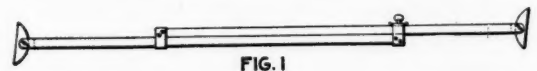


FIG. 1

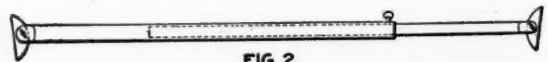


FIG. 2

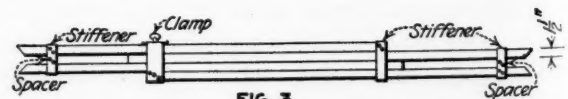


FIG. 3

THREE TYPES OF STULL-MEASURING DEVICE

the hitches. No effort at all is made to obtain the batter placing the stull. If a tape is used it takes a pretty good man to measure the distances between hitches, go to the surface or out to a station and measure the stick of timber selected with the same pull maintained in the stretching of the tape as he had employed in measuring of the hanging-wall hitch, the empty space being filled up with a mass of wooden wedges.

Where two sticks are used to obtain the stull length and batter, the miner will usually be found notching the sticks with a pocket knife to mark the distances.

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After the same sticks have been notched several times, he becomes confused in deciding which notches are the last ones and serious errors result.

It was the consideration of these perfectly obvious, yet commonly committed errors, that led to the evolution of the stull-measuring stick, several forms of which are shown in the accompanying sketch. The most common form employed and the one most easily constructed is shown in Fig. 1, where the end clamping plates are used to get the batter of the hitches. Of course the end plates and the central clamp are fastened when the device is placed between the hitches, so that an exact reproduction of the stull required is obtained. The form shown in Fig. 2 is made of telescoping iron pipe and can be made in any mine blacksmith shop. The rotation of one pipe inside the other permits the measurement of hitches in walls that diverge or converge horizontally. The form shown in Fig. 3 is a new device that was brought to our attention by a miner who had been using notched sticks. One clamp locks the whole four sticks in position, enabling the measurement to be taken with little trouble and without assistance. The stiffness of the ends adds rigidity to the device. It is possible to use a system of figures on the sticks so that a series of hitches can be measured without making a separate trip for each.—*Engineering and Mining Journal*.

## Daily Report Sheets

By R. Z. VIRGIN\*

Mine officials, from the fireboss to the top of the official rank, frequently have ideas and forms of their own to enable them to tell at a glance just how their costs, tonnage, averages, etc., stand as compared with the preceding month.

The table illustrates how one superintendent in a certain mine can tell at a glance each morning how his costs are for the current month, how his tonnage matches up with the preceding month, the average weight of each load of coal sent out of the shaft and the average tonnage per man employed in loading. The mining rate for pick and machine coal could be placed thereon also, but in

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DAILY REPORT SHEET SHOWING EXACT CONDITION AT THE MINE FOR EACH 24 HOURS

| Date | Cars Out |        | Tonnage |        | Labor Costs per Ton |       | Total Time Cost |          | Average Weight |       | Rock Cars Out |      | Cost of Dumping |        | Loaders |      | Daily Tonnage per Man |      |
|------|----------|--------|---------|--------|---------------------|-------|-----------------|----------|----------------|-------|---------------|------|-----------------|--------|---------|------|-----------------------|------|
|      | Nov.     | Dec.   | Nov.    | Dec.   | Nov.                | Dec.  | Nov.            | Dec.     | Nov.           | Dec.  | Nov.          | Dec. | Nov.            | Dec.   | Nov.    | Dec. | Nov.                  | Dec. |
| 1    | 377      | 297    | 760     | 612    | 27.53               | 34.10 | \$209.27        | \$208.73 | 4,034          | 4,032 | 32            | 30   | \$6.00          | \$6.00 | 18.7    | 20.0 | 82                    | 89   |
| 2    | 803      | 733    | 1,622   | 1,491  | 26.49               | 27.65 | 429.67          | 412.26   | 4,050          | 4,078 | 73            | 53   | 18.00           | 10.00  | 19.3    | 19.0 | 88                    | 101  |
| 3    | 1,205    |        | 2,439   |        | 26.18               |       | 638.48          |          | 4,048          |       | 142           | 26   |                 | 18.3   |         | 84   |                       | 9.7  |
| 4    | 1,544    |        | 1,133   | 3,129  | 27.02               | 29.87 | 845.34          | 687.29   | 4,108          | 4,079 | 204           | 68   | 34.00           | 16.00  | 16.6    | 23.5 | 91                    | 102  |
| 5    |          |        | 1,576   |        |                     |       | 919.70          |          | 4,056          |       | 113           |      |                 | 24.00  | 21.0    | 108  |                       | 7.6  |
| 6    | 1,924    | 2,072  | 3,907   | 4,196  | 29.72               | 27.76 | 1,161.06        | 1,164.38 | 4,061          | 4,050 | 230           | 148  | 42.00           | 34.00  | 18.3    | 23.0 | 103                   | 111  |
| 7    | 2,338    | 2,573  | 4,728   | 5,211  | 29.89               | 27.00 | 1,412.41        | 1,407.16 | 4,002          | 4,050 | 272           | 209  | 52.00           | 44.00  | 19.1    | 22.0 | 92                    | 109  |
| 8    | 2,698    | 3,040  | 5,465   | 6,167  | 30.46               | 26.92 | 1,664.89        | 1,660.68 | 4,072          | 4,057 | 313           | 238  | 63.00           | 51.50  | 20.1    | 21.6 | 99                    | 113  |
| 9    | 3,065    | 3,457  | 6,199   | 7,020  | 31.55               | 27.00 | 1,917.79        | 1,895.93 | 4,045          | 4,061 | 328           | 271  | 73.00           | 61.00  | 22.2    | 22.5 | 75                    | 106  |
| 10   | 3,393    |        | 6,869   |        | 30.78               |       | 2,169.04        | 1,963.17 | 4,049          |       | 384           |      |                 | 83.00  |         | 98   |                       | 7.8  |
| 11   | 3,824    |        | 3,829   | 7,779  | 30.78               | 28.15 | 2,383.33        | 2,190.35 | 4,049          | 4,063 | 432           | 279  | 91.00           | 69.00  | 21.0    | 24.7 | 105                   | 93   |
| 12   |          |        | 4,238   |        |                     |       | 2,412.61        | 2,431.90 |                |       | 328           |      |                 | 79.00  | 24.0    |      | 98                    |      |
| 13   | 4,164    | 4,698  | 8,428   | 9,521  | 31.26               | 28.14 | 2,635.13        | 2,679.51 | 4,048          | 4,053 | 457           | 363  | 101.00          | 87.00  | 22.1    | 23.9 | 89                    | 111  |
| 14   | 4,593    | 5,143  | 9,292   | 10,416 | 30.71               | 27.96 | 2,854.13        | 2,912.41 | 4,046          | 4,050 | 487           | 394  | 107.00          | 95.00  | 21.9    | 23.8 | 104                   | 111  |
| 15   | 5,061    | 5,652  | 10,213  | 11,447 | 30.38               | 27.48 | 3,068.92        | 3,146.56 | 4,035          | 4,050 | 516           | 425  | 113.00          | 105.00 | 21.9    | 24.7 | 99                    | 110  |
| 16   | 5,456    | 6,049  | 11,015  | 12,247 | 31.15               | 27.56 | 3,320.82        | 3,375.15 | 4,037          | 4,049 | 550           | 461  | 119.00          | 113.00 | 21.6    | 24.3 | 96                    | 103  |
| 17   | 5,901    |        | 11,933  |        | 29.85               |       | 3,562.26        | 3,434.68 | 4,034          |       | 591           |      | 127.00          |        | 21.5    |      | 98                    |      |
| 18   | 6,343    |        | 6,437   | 13,039 | 29.58               | 28.45 | 3,794.93        | 3,710.80 | 4,044          | 4,051 | 621           | 484  | 133.00          | 121.00 | 21.4    | 25.0 | 102                   | 110  |
| 19   |          |        | 6,864   |        |                     |       | 3,831.13        | 3,939.64 |                | 4,051 | 517           |      | 127.00          |        | 24.5    |      | 113                   |      |
| 20   | 6,766    | 7,314  | 13,690  | 14,819 | 29.76               | 28.20 | 4,075.26        | 4,179.49 | 4,046          | 4,052 | 653           | 546  | 139.00          | 133.00 | 21.2    | 24.3 | 104                   | 113  |
| 21   | 7,224    | 7,706  | 14,616  | 15,801 | 30.00               | 28.00 | 4,327.48        | 4,425.08 | 4,046          | 4,052 | 700           | 596  | 147.00          | 141.00 | 21.0    | 24.0 | 102                   | 118  |
| 22   | 7,687    | 8,230  | 15,546  | 16,701 | 29.56               | 27.96 | 4,595.72        | 4,670.74 | 4,044          | 4,058 | 735           | 615  | 155.00          | 149.00 | 21.0    | 24.4 | 100                   | 119  |
| 23   | 8,137    | 8,633  | 16,413  | 17,478 | 29.57               | 27.86 | 4,854.22        | 4,869.72 | 4,034          | 4,048 | 768           | 615  | 167.00          | 149.00 | 20.7    | 24.2 | 102                   | 111  |
| 24   | 8,622    |        |         |        | 29.35               |       | 5,108.96        | 4,878.07 | 4,036          |       | 813           |      | 167.00          |        | 20.5    |      | 100                   |      |
| 25   | 9,071    |        | 18,313  |        | 29.22               |       | 5,351.46        | 4,878.47 | 4,037          |       | 842           |      | 175.00          |        | 20.8    |      | 102                   |      |
| 26   |          | 8,845  |         | 17,910 |                     | 28.54 |                 | 5,112.53 |                | 4,049 | 615           |      | 149.00          |        | 24.2    |      | 63                    |      |
| 27   | 9,423    | 9,259  | 19,028  | 18,755 | 29.66               | 28.41 | 5,647.62        | 5,329.83 | 4,038          | 4,050 | 869           | 648  | 183.00          | 157.00 | 21.0    | 24.2 | 92                    | 96   |
| 28   | 9,983    | 10,208 | 20,159  | 19,671 | 28.29               | 28.22 | 5,874.69        | 5,566.53 | 4,038          | 4,052 | 901           | 689  | 191.00          | 168.00 | 21.1    | 23.6 | 105                   | 102  |
| 29   | 10,446   | 10,144 | 21,082  | 20,567 | 28.90               | 28.73 | 6,134.55        | 6,055.98 | 4,036          | 4,054 | 927           | 756  | 207.00          | 173.00 | 21.4    | 23.6 | 105                   | 112  |
| 30   | 1,056    | 10,597 | 21,314  | 21,491 | 28.73               | 28.16 |                 |          | 4,036          | 4,054 | 927           | 756  | 207.00          | 181.00 | 22.3    | 23.9 | 63                    | 114  |
| 31   |          |        |         |        |                     |       | 6,090.24        |          |                |       |               |      |                 |        |         |      |                       |      |

Fire in mine.

Fail of Slate in M. Entry

Motor in bumper shop.

Motor in bumper shop.

Motor in bumper shop.

Motor in bumper shop.

Motor in bumper shop.

Motor in bumper shop.

Christmas.

Thanks,giving. No day

this particular mine it rarely varies much, as the entire output is machine-mined. The form shown is a report of operations at the mine after the day shift was completed, and the next day shift commenced.

In the morning the mine foreman reads the report and finds out just how conditions are; the electrician looks it over for broken locomotives, mining machines, pumps, etc., or lines down, and signs his initials; the boss hauler examines it to find where the loaded trips are, so he can dispatch the locomotives to the right sidetrack for loads to commence the day's work, and he also knows

### MINING DEPARTMENT

NIGHT TURN REPORT OF OPERATIONS, DATE Feb. 8th, 1917.

Was the fan running and kept running during the entire shift? Yes.

Did you do the work ordered by foreman of the mine? Yes, except for track, see note.

Were you inside the mine the entire shift? Yes.

Number of loaders working 38.

Day laborers working were on the following jobs:

| Hauling Coal | Hauling Supplies | Hauling Water | Working on Track | Cleaning Tracks | Timbering Entries | Working on Lines | Total No. Laborers |
|--------------|------------------|---------------|------------------|-----------------|-------------------|------------------|--------------------|
| 2            | 5                | 1             | 4                | 0               | 0                 | 0                | 12                 |

Where was this work done? 3rd North, Main Air Course, 5 Left and 3rd South entries.

Name places working at night (entries only). 4, 5, 6, 7, 9 Norths, 3, 4, 5, 6, Souths, and 1, 2, 3 Mains.

How many loads hauled outside? 136.

Loads on No. 1—Side track. 37.

Loads on No. 2—Side track. 35.

Loads on No. 3—Side track. 15.

Where are the empty cars? 26 on No. 3 Sidetrack, 32 Down Main, and 47 in Main South Dip.

Was anyone injured during the night? Yes. If so, make report. Report attached.

Was any damage done to any locomotive or cutting machine? No.

Was there any fire discovered during the night? Fire found face of No. 1. Put out.

Was the gas ignited any place? Yes. If so, where? Third South entry.

Cars or trains off track at trip off 6 cars at 6 Left Switch.

If any ventilating door was broken make temporary repairs. None broken.

What time did you enter the mine? 3.30 P.M. Came out 11.30 P.M.

Do you consider the mine safe? Yes. If not, make report.

Remarks: Gas ignited by shot in 3rd South, but was put out at once.

R. Z. VIRGIN, Night Foreman.

T. M. S., Mine Foreman.

F. M. F., Electrician.

J. R., Boss Hauler.

from the report where to find the trains of empties and trains off the track. He signs his initials after examining the report, and if there is a wreck, or cars off, he can divert that haulage work somewhere else until the wreck is cleared.

When the superintendent arrives in the morning he reads the report and notes the mine condition, sees if any damage has been done, and also notes the signatures of the heads of departments in the mine. He then has the satisfaction of knowing that the electrician, boss hauler and mine foreman are aware of the materials required and the damages done during the night, if any.

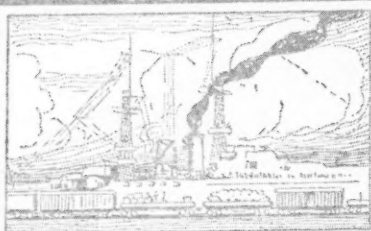


# THE NEW ALLY

*By Berton Braley*



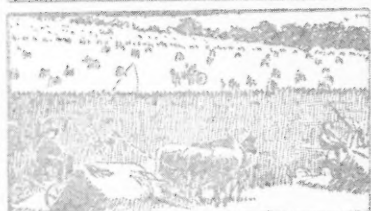
*We enter the war with the other democracies of the world, including our Canadian Brethren, not so much to "beat up" Germany as to make a new earth where peace may be safe and democracy assured. America fights, not for material gain, but for principle.*



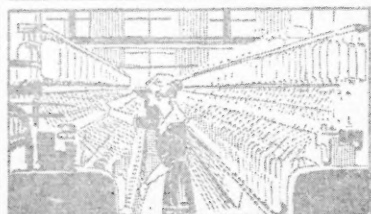
*Putting our Navy on War Footing*



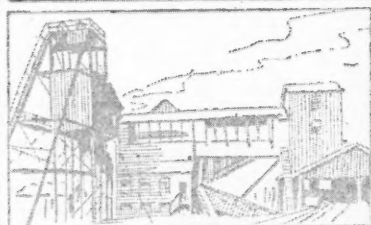
*Creating and Equipping a Great Army*



*We must supply abundant Food for ourselves, our Armies and our Seamen*



*Abundant Materials out of Mines and Factories to Clothe and Equip our Forces*



*Coal to keep the Fires going in Ships at Sea*

Cheer up, Tommy Atkins and Johnny Crapaud,  
Your road has been weary and bloody, we know;  
You've fought through discouragement, sorrow, defeat,  
When failure seemed certain and gloom was complete;  
But always our hearts and our prayers were with you  
And now all our wealth and our power are too;  
We've picked up the sword, and we've laid down the pen  
And Uncle Sam's coming with millions and men!

Our vessels shall come to you loaded with grain,  
So many the U-boats will fight them in vain;  
From mills and from shops, from farms and from mines,  
Munitions and foodstuffs shall come to your lines;  
And soon we shall send, with our steel and our guns,  
A million or so of our gallantest sons;  
We'll help to bring peace to the world once again  
With Uncle Sam's millions and Uncle Sam's men!

We hate all the bloodshed and horror of war,  
But freedom and justice are worth fighting for;  
And therefore we join with your battle-scarred clan  
To make the world safe for the future of man;  
Fight on, brother nations, be steadfast of heart,  
We're coming to join you and take up our part,  
To fight till democracy conquers again  
With Uncle Sam's millions and Uncle Sam's men!



# Grade Revision of Underground Roads

By R. D. BROWN\*

**SYNOPSIS**—The extending development of a mine frequently necessitates careful revision of the grades on the haulageway. Sharp grades, either favoring or adverse, should be avoided, as should also repeated reversal of grade. Abrupt changes of inclination are liable to cause wrecks.

The problem of securing a safe and efficient underground haulage where conditions are unfavorable will require engineering skill and practical experience. There are many natural conditions, varying both in their characteristics and in their combined effect, which make necessary a detailed study of every proposition. Usually the fact that a haulage road is being operated under unfavorable conditions is sufficient reason for starting an investigation leading up to some decision.

The assembling of facts, and later the actual carrying out of the plans adopted, may be divided into five separate steps, which follow in logical order: (1) Preliminary investigation; (2) completion of surveys and collecting data; (3) map making, profiles, charts, etc.; (4) plans, estimates, specifications and decision; (5) construction. As development proceeds in any coal mine, certain local elevations or depressions may occur, temporarily deranging the short haul to the gathering points. The management, although aware of the facts, may note the effect of these inequalities by inspecting the daily report of cars hauled per driver or gathering motor in different sections of the mine. If a different routing will not overcome the adverse condition, other means must be employed to remedy the situation. This is especially true when the life of the haulage is not limited to a mere local development and bears a definite relation to the economic operation of an entire section of the mine. Thus a main-line roadway must pass through the preliminary stages of usefulness, and through revision and reconstruction made necessary by increasing traffic eventually reaching its highest state of efficiency. It is during this developing stage that engineering skill and judgment are particularly essential.

The projected working plan of the mine followed in sequence by the management, with perhaps a few changes as obstacles appear, makes possible an advance computation of the tonnage available to be hauled over any roadway. With this information as a premise, a detailed study of the possible economies should be undertaken; and if a saving will result from a grade revision, then all information which can be obtained at a reasonable cost to aid in forming a definite decision should be gathered.

Accurate maps are always necessary to intelligently plan any proposed improvement in territory already developed. We will presuppose that adequate maps have been prepared previously, and in addition levels have been

run on entries. Reference to the map will then give a general idea of conditions; and if the irregularities of the seam are great, a contour map may be made to assist in choosing advantageous routings. Later, more detailed elevations must be obtained to plot the profile and establish a grade.

The fieldwork connected with the running of underground levels should not involve any special difficulties. In fact, it consists of the simple operation of taking the elevation of top and bottom at intervals of 50 ft. or less, together with the widths of entries and all other side notes required to establish a complete record of existing conditions. All elevations should be referred to sea level, and the pluses or distances should be carried continuously from the shaft bottom or the mouth of the drift or slope. By doing this, the distance from the mine opening along the haulage road for any particular point is definitely known.

The most convenient instrument for underground leveling is a transit of medium size equipped with the vertical circle for inclined sights and a telescope bubble tube of reasonable length. With such an instrument, the mine surveyor may quickly and accurately obtain any information desired. If there are no abrupt changes of level, an ordinary wye level may be used advantageously; but since the transit must be used for location, it is therefore the necessary instrument. Usually, the elevations are kept up to the date of the extensions of location, and in this case the mine transitman takes the elevations along the entry as the stations and sights are moved up to the face, and, consequently, he will use a transit, which suffices for both operations.

The level rod best adapted to underground work is an ordinary Philadelphia or New York rod from 3 to 5 ft. in length, with the usual extension. The target should be

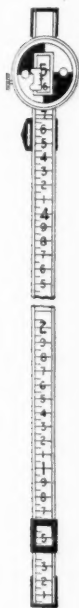


FIG. 1.  
LEVELING  
ROD

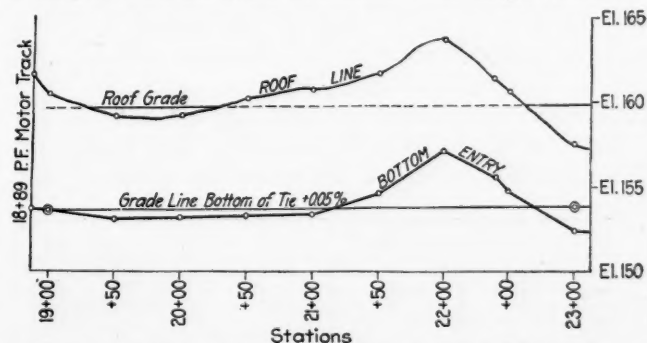


FIG. 2. LONGITUDINAL CROSS-SECTION OF HEADING

drilled as shown in Fig. 1, to establish a horizontal line of sight which may be illuminated to check the plumbing of the rod if the target is not otherwise visible.

For ordinary rapid work in a coal mine, the level party should be made up of four men. Two men chain in advance on the previously established sight line, locating the regular stations and taking all pluses or distances to objects, or relative operating conditions along the line. These notes are called to the recorder and also marked on the roof or rib in plain view of the rodman or instrumentman, who immediately follows. If the rodman is capable, he should act as recorder of the party; otherwise this duty is performed by the instrumentman.

\*Harrisburg, Ill.

Frequently the level party will consist of only two, the instrumentman and the rodman, who must previously chain the course and then follow up with the instrument work. When gob, slate and other mine refuse have been piled along the temporary development track, this should be noted and a cross-section taken at every station or intermediate point where there is a changed condition. The bottom of the coal will not usually be visible, consequently where track is laid the top of the tie or rail should be chosen as a convenient point for the bottom elevations along the center line. The top elevations should be taken immediately above those chosen for the bottom, and in case of local falls of roof these must also be located by pluses and cross-sections, to obtain an accurate estimate of the yardage with proper classification.

After the notes have been taken along the center line of an entry, side shots into rooms may often be made for the purpose of making a contour map which will facilitate the location of a low grade line for either haulage or drainage. It is also frequently necessary to locate bench marks which will not be disturbed by falling slate or by mining operations. Future extensions of the system of levels depend on the permanent bench marks, and in case construction work is contemplated, grade stakes may be quickly set and checked when all records are preserved.

Intelligent notes are essential for plotting profiles and for the preservation of a permanent record. The form by which notes are kept depends somewhat on the experience and convenience of the note keeper. Unless a special notebook is employed, it is usually advisable to employ the standard level book and to adopt a suitable form, somewhat similar to that shown in Fig. 3. A profile may easily be plotted from such notes after they have been worked up in detail.

With the notes completed, the profile should be plotted on standard profile paper, using a convenient scale. I prefer a horizontal scale of 1 in. = 50 ft. and a vertical scale of 1 in. = 4 ft. for seams of medium thickness and modifications for extreme conditions. The pluses to all operating features such as trapdoors, entry junctions, fault lines, room necks, crosscuts and local falls of roof must be noted in their proper location on the profile in order to assimilate intelligently the significance of all the limiting features when establishing a grade line.

The locating engineer for a railway line usually endeavors to make the cuts approximately equal the fills.

This is an impossible condition underground. If this were possible it would seldom be found practicable, because the difference between the cost of taking up bottom and that of brushing down top is often considerable. In many cases the materials removed from either top or bottom must be hauled away to be hoisted out of the mine, or wasted in worked-out areas where caving has not taken place. The cost of transportation, loading and unloading may be limiting factors, and when possible special places should be driven to provide for wasting.

The engineer must also take into consideration the nature of the roof and the bottom under the coal. Sometimes roof conditions may be improved by arching the top or by taking down the tender portion of the strata and thus exposing the hard cap rock, but in other cases it may be advisable not to shatter the roof or to disturb the timbering. If the mine is wet and the strata immediately

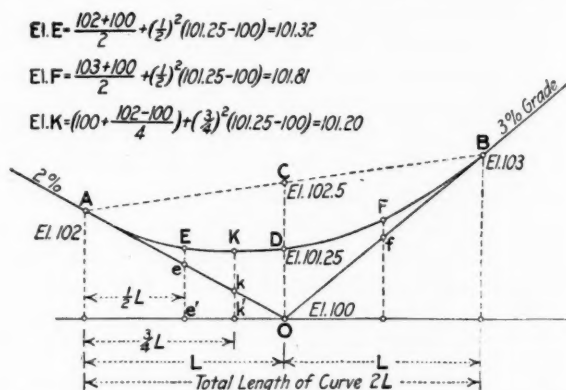


FIG. 4. METHOD OF EASING VERTICAL CURVE

under the coal consist of a soft fireclay of medium thickness, it may not be possible to maintain a pillar of fireclay after excavation has been made.

Other factors relative to alignment and original location materially affect the proposed grade line. For example, a junction of two roadways may cause a necessary break in grade, resulting in the use of a vertical curve; and in case of a curved alignment, compensation for the curvature should be added to the actual grade to obtain the effectual grade in per cent. The apparent advantage of taking these important operating factors into consideration increases as time unravels the mysteries of the earlier stages of development.

Having in operation equipment of known capacity, a ruling grade establishes a limit to the amount of output, which may be far below the normal under average conditions. Repeated reversal of grade is also objectionable, as much power is thus wasted in useless work. If the adverse slope, which may be a limiting grade, is immediately preceded by one in favor of the moving trip, and the acquired momentum will make it possible to ascend the adverse grade, the advantages to be gained by revision will not warrant the expenditure.

Momentum grades are objectionable for the following reasons: (1) Cars will derail in the swags. To remedy this, short couplings should be used in order to reduce the total amount of slack in the trip. (2) If the power fails while a motor is on a grade, the trip may become unmanageable. (3) When the speed becomes excessive, the locomotive will be unable to control the trip. (4) Much power is wasted in accelerating the velocity of the trip in order to ascend the adverse grade. (5) The safety factor of the entire mine is reduced.

| LEVELS FOR EXTENSION |       |         |        |         |        |        |        |       |        | 43  |
|----------------------|-------|---------|--------|---------|--------|--------|--------|-------|--------|---|
| OF MOTOR ROAD ON     |       |         |        |         |        |        |        |       |        | Quinn - West  |
| 3RD EAST SOUTH       |       |         |        |         |        |        |        |       |        | Giddings - Road   |
| Sta.                 | B.S.  | H.T.    | Red on | Flex.   | Red on | Flex.  | Red on | Flex. | Red on | Grades & Grades ch  |
|                      |       |         | Bottom |         | Roof   |        |        |       |        | 4-16-13   |
| B.M.                 | 3.135 | 157.485 |        | 160.63  |        |        |        |       |        | B.M. is Sped. Sta. 25 See Page 16 This Book for this data |
| 18+89                | 2.712 | 156.422 | 3.785  | 153.71  | 4.15   | 161.64 |        |       |        | T.P. on 1st of Frog - Grades Set                          |
| 19+00                |       |         | 2.80   | 153.622 | 4.07   | 160.49 |        |       |        | 153.62  |
| 19+50                |       |         | 3.30   | 153.12  | 7.63   | 159.05 |        |       |        | 153.64  |
| 20+00                |       |         | 3.20   | 153.22  | 7.66   | 159.08 |        |       |        | 153.67  |
| 20+50                |       |         | 3.10   | 153.32  | 3.66   | 160.08 |        |       |        | 153.69  |
| 21+00                |       |         | 3.00   | 153.42  | 4.30   | 160.72 |        |       |        | 153.72  |
| 21+50                |       |         | 1.80   | 154.62  | 5.20   | 161.82 |        |       |        | 153.74  |
| 22+00                | 4.544 | 159.156 | 1.810  | 154.612 |        |        |        |       |        | T.P. on Gob   |
| 22+10                |       |         | 2.00   | 157.16  | 4.55   | 163.71 |        |       |        | 153.77  |
| 22+40                |       |         | 3.52   | 155.64  | 2.20   | 161.35 |        |       |        |   |
| 22+50                | 3.805 | 157.534 | 2.185  | 161.341 |        |        |        |       |        | T.P. on Roof  |
| 22+812               | 1.980 | 155.491 | 0.435  | 157.971 | 3.05   | 160.59 |        |       |        | T.P. = B.M. on Sped. Sta. 19                              |
| 23+00                |       |         | 3.60   | 152.39  | 1.55   | 157.54 |        |       |        | 153.82  |
| 23+50                |       |         | 2.50   | 153.49  | 4.00   | 159.94 |        |       |        | 153.85  |
| 24+00                |       |         | 2.30   | 153.69  | 4.90   | 160.89 |        |       |        | 153.87  |
| 24+50                |       |         | 3.80   | 152.19  | 1.65   | 157.64 |        |       |        | 153.90  |
| Cont next Page       |       |         |        |         |        |        |        |       |        |   |

FIG. 3. SAMPLE FORM FOR NOTES



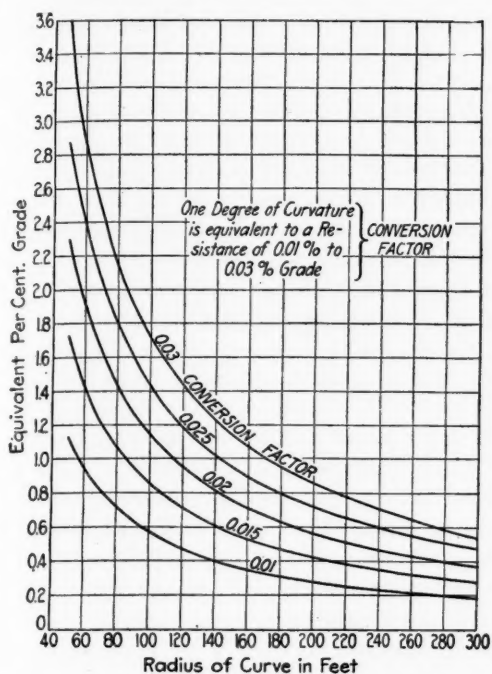


FIG. 5. GRADE EQUIVALENT OF CURVATURE

An abrupt change of grade on a motor road is the direct cause of many derailments. The motor trip will ordinarily have slack to be taken up when the grade changes from one descending to one ascending. As the cars start to ascend the grade, each coupling receives a jerk which may cause the wheels to climb the rail and also throws coal from the topping of the car. If the lumps of coal are large enough, they may cause derailments and will eventually prove a menace to the safe operation of the mine, as both large and small lumps will be ground to fine dust, which might later feed the flames of a possible dust explosion. It is consequently necessary that this coal be cleaned up and removed at once.

To avoid abrupt changes of grade vertical curves are used. The usual form is the parabola, as shown in Fig. 4. Referring to this figure, suppose  $AO$  is a descending grade of 2 per cent. and  $OB$  an ascending grade of 3 per cent. Assuming that the vertical curve is to be 200 ft. long, we proceed as follows: Connect  $A$  and  $B$ ; find the center of the line at point  $C$  and draw the line  $OC$ . The vertical curve will pass through a point  $D$  midway between  $O$  and  $C$ . The elevation of points  $A$ ,  $O$  and  $B$  being known, the elevation of points  $C$  and  $D$  are easily calculated. The point  $C$  is midway between the elevations of  $A$  and  $B$ , and  $D$  is midway between  $C$  and  $O$ . To obtain the elevation of point  $E$  halfway between  $A$  and  $D$ , add to the elevation of point  $e$  one-fourth of the difference between the elevations of  $D$  and  $O$ .

For any other points between  $A$  and  $O$  or  $O$  and  $B$ , the elevation is obtained by adding to the elevation of the grade point the product of the square of the fraction representing the ratio of the distance of the given point from  $A$  or  $B$  to the total distance of  $A$  to  $O$  or  $B$  to  $O$ , and the difference in elevation of the points  $D$  and  $O$ .

For example, the point  $K$  is located vertically above the three-quarters point between  $A$  and  $O$ , and the elevation of  $K$  would be 101.20.

$$(102 - 100)/4 + (\frac{3}{4})^2 (101.25 - 100) = 101.2$$

The vertical curve should also be used when two grades meet at a summit. The method of procedure is similar to the one described above, except for the fact that the cor-

rections are subtracted from the elevations of the grade points instead of being added.

An irregular or curved alignment may make necessary an adjustment of grade, for curves not only limit the speed of the trip but also offer a certain resistance to traction. Experience with standard-gage railway equipment has demonstrated the fact that the resistance of 1 deg. of curvature is equivalent to a grade of 0.025 to 0.04 per cent., depending on conditions. Since the rolling stock of the mine is less rigid, a fair allowance for underground curve resistance would be from 0.01 to 0.035 per cent. per degree of curvature. For example, suppose we have a curve of 250-ft. radius, which we find in Table I to be nearly a 23-deg. curve. The tractive resistance due to curvature alone would then be equivalent to a grade of 0.58 per cent., using the factor 0.025 per degree of curve.

When all data have been gathered and made available by maps, profiles and charts, the estimated cost of the various proposed plans, routings and schemes must be made for purposes of comparison. An intelligent estimate of cost must consider detail and be based on accurate knowledge of the proposed requirements, together with the application of unit costs of similar work formerly completed. A convenient form for assembling an estimate of cost of a motor road extension or revision is shown in the form, Fig. 6. The detail required is not exacting, yet a fairly complete record is indicated. When the management has definitely decided on the execution of the work a final estimate is made, and a copy bearing the official signature of approval is sent to each administrative department concerned. The record is thus made complete.

| FORM No. 1<br>ABC COAL COMPANY               |      |          |            |                                  |       |          |       |
|--|------|----------|------------|----------------------------------|-------|----------|-------|
| General Estimate                             |      |          |            | Proposed Extension of Motor Road |       |          |       |
| Ft. and Construction of                      |      |          |            | Ft. Parting                      |       |          |       |
| MINE No.                                     |      |          |            |                                  |       |          |       |
| ITEM   | Rate | Material | On hand or | Mat'l to be                      | Unit  | Material | Labor |
| Tons   |      | Mat'l    | on hand    | to be                            | Price | Cost     | Cost  |
| Laid   |      |          |            |                                  |       |          |       |
| Taken up                                     |      |          |            |                                  |       |          |       |
| Tons   |      |          |            |                                  |       |          |       |
| Laid   |      |          |            |                                  |       |          |       |
| Taken up                                     |      |          |            |                                  |       |          |       |
| Kgs. Small Spikes                            |      |          |            |                                  |       |          |       |
| Size   |      |          |            |                                  |       |          |       |
| Kgs. Motor Spikes                            |      |          |            |                                  |       |          |       |
| Size   |      |          |            |                                  |       |          |       |
| Motor Ties                                   |      |          |            |                                  |       |          |       |
| Size   |      |          |            |                                  |       |          |       |
| Small Ties                                   |      |          |            |                                  |       |          |       |
| Prs. Fish Plates                             |      |          |            |                                  |       |          |       |
| No. Rails                                    |      |          |            |                                  |       |          |       |
| No. Rails                                    |      |          |            |                                  |       |          |       |
| Kgs. Track Bolts                             |      |          |            |                                  |       |          |       |
| No. Rails                                    |      |          |            |                                  |       |          |       |
| No. Rails                                    |      |          |            |                                  |       |          |       |
| Bonds  |      |          |            |                                  |       |          |       |
| Bonding Caps                                 |      |          |            |                                  |       |          |       |
| Bonding Sleeves                              |      |          |            |                                  |       |          |       |
| Progs and Switches                           |      |          |            |                                  |       |          |       |
| No. Rails                                    |      |          |            |                                  |       |          |       |
| No. Rails                                    |      |          |            |                                  |       |          |       |
| 2/0 Trolley Wire                             |      |          |            |                                  |       |          |       |
| 4/0 Trolley Wire                             |      |          |            |                                  |       |          |       |
| Hangers and Clamps                           |      |          |            |                                  |       |          |       |
| Wire Splicing Sleeves                        |      |          |            |                                  |       |          |       |
| Trolley Frogs                                |      |          |            |                                  |       |          |       |
| Automatic Cut-out Switches                   |      |          |            |                                  |       |          |       |
| Trolley Wire Guards                          |      |          |            |                                  |       |          |       |
| Insulated Telephone Wire                     |      |          |            |                                  |       |          |       |
| Porcelain Insulators and Pins                |      |          |            |                                  |       |          |       |
| Material to be Delivered                     |      |          |            |                                  |       |          |       |
| Cleaning Oil, Etc.                           |      |          |            |                                  |       |          |       |
| Grading..... Yds. Top                        |      |          |            |                                  |       |          |       |
| Grading..... Yds. Bottom                     |      |          |            |                                  |       |          |       |
| Setting Posts                                |      |          |            |                                  |       |          |       |
| Setting Timber Sills and Cross Bars          |      |          |            |                                  |       |          |       |
| Misc. Expense                                |      |          |            |                                  |       |          |       |
| Total Estimated Cost                         |      |          |            |                                  |       |          |       |
| Credits of Material not applied to estimate. |      |          |            |                                  |       |          |       |
| Tons   |      |          |            |                                  |       |          |       |
| Small Ties                                   |      |          |            |                                  |       |          |       |
| Total Value Credits to be Deducted           |      |          |            |                                  |       |          |       |
| Grand Total Estimated Cost                   |      |          |            |                                  |       |          |       |
| The extension of this Motor Road will        |      |          |            |                                  |       |          |       |
| Estimated by                                 |      |          |            |                                  |       |          |       |
| Approved by                                  |      |          |            |                                  |       |          |       |
| Date   |      |          |            |                                  |       |          |       |

FIG. 6. COST-ESTIMATE FORM



Anticipating construction, the engineering department should next prepare plans and profiles of the proposed work in triplicate, furnishing a copy of each to both the operating and executive departments. Specifications for materials to be used should also be filed with the purchasing agent, together with a copy of the approved estimate showing the amount of material available and the amount to be bought.

After the grade line has been established, the grade elevations marked on the profile and the grade column in the notebook filled in, the notebook may be taken below and the grade stakes set for construction. It is most convenient to place grade plugs in the rib at some fixed point or distance above or below grade. A common breast drill with a  $\frac{1}{2}$ - to  $\frac{3}{4}$ -in. bit may be employed to drill the

however, abundant opportunities for the management engineer to greatly reduce the cost of underground construction work if he has experienced similar conditions. A reasonable cost will depend on the evolution of a systematized method and strict adherence to two fundamental principles of good management; first, the number of men employed on any one section in any period shall be adjusted to the amount and classification of work to be done and, secondly, only experienced men should be employed.

A careful study of the progress made from day to day will plainly show any weak point in the organization and will often indicate a probable remedy. Progress charts, coupled with the report of the daily time, are useful in judging the comparative efficiency of the organization as a whole or in part and also leaves a record of unit costs for making future estimates and comparisons. Referring to the form, Fig. 7, which is exhibited as a mere suggestion, we may note that useful information may be obtained with little effort. The amount of progress for any particular classification between survey stations can

FORM No. 2  
DAILY TIME AND PROGRESS CHART  
MOTOR ROAD CONSTRUCTION

Mine No. 3 Estimate No. 410 Date 4-6-15

| Check No. | Name           | RATE | Hours    |                 |                     |                         |                     |                |              |                        |                   |     | MATERIAL RECEIVED |      |  |
|-----------|----------------|------|----------|-----------------|---------------------|-------------------------|---------------------|----------------|--------------|------------------------|-------------------|-----|-------------------|------|--|
|           |                |      | Cleaning | Taking up Track | Drilling & Shooting | Loading Rock or Mucking | Drivers or Motorman | Unloading Rock | Laying Track | Bonding & Hanging Wire | Timbering & Misc. | No. |                   | Item |  |
| 112       | Tom Smith      | 3.00 |          |                 |                     |                         |                     |                |              |                        |                   |     |                   |      |  |
| 120       | Jack Cook      | 2.75 |          |                 |                     |                         |                     |                |              |                        |                   |     |                   |      |  |
| 143       | Tom Smith      | 3.00 |          |                 |                     |                         |                     |                |              |                        |                   |     |                   |      |  |
| 146       | Mike Shockey   | 3.00 |          |                 |                     |                         |                     |                |              |                        |                   |     |                   |      |  |
| 179       | Tom Smith      | 3.00 |          |                 |                     |                         |                     |                |              |                        |                   |     |                   |      |  |
| 271       | Harry Thomas   | 3.00 |          |                 |                     |                         |                     |                |              |                        |                   |     |                   |      |  |
| 63        | Joe Woods      | 2.75 |          |                 |                     |                         |                     |                |              |                        |                   |     |                   |      |  |
| 102       | Mike Shockey   | 2.75 |          |                 |                     |                         |                     |                |              |                        |                   |     |                   |      |  |
| 28        | Frank Harris   | 2.75 |          |                 |                     |                         |                     |                |              |                        |                   |     |                   |      |  |
| 36        | James McDonald | 2.75 |          |                 |                     |                         |                     |                |              |                        |                   |     |                   |      |  |
| 173       | Tom Smith      | 2.75 |          |                 |                     |                         |                     |                |              |                        |                   |     |                   |      |  |
| 174       | Joe Woods      | 2.75 |          |                 |                     |                         |                     |                |              |                        |                   |     |                   |      |  |
| 183       | Tom Smith      | 2.75 |          |                 |                     |                         |                     |                |              |                        |                   |     |                   |      |  |
| 201       | Sam Miller     | 3.00 |          |                 |                     |                         |                     |                |              |                        |                   |     |                   |      |  |
| 48        | John Henry     | 3.00 |          |                 |                     |                         |                     |                |              |                        |                   |     |                   |      |  |
| 51        | Tom Smith      | 3.00 |          |                 |                     |                         |                     |                |              |                        |                   |     |                   |      |  |
| 51        | Joe Woods      | 3.00 |          |                 |                     |                         |                     |                |              |                        |                   |     |                   |      |  |
| 41        | John Henry     | 3.00 |          |                 |                     |                         |                     |                |              |                        |                   |     |                   |      |  |
| 42        | Joe Woods      | 3.00 |          |                 |                     |                         |                     |                |              |                        |                   |     |                   |      |  |

PROGRESS CHART

Note: Place a cross in the squares to indicate the portion completed between each station

|                        | Sta 5+0 | Sta 5+50 | Sta 6+0 | Sta 6+50 | Sta 7+0 | Sta 7+50 | Sta 8+0 |
|------------------------|---------|----------|---------|----------|---------|----------|---------|
| Cleaning               |         |          |         |          |         |          |         |
| Taking up Track        |         |          |         |          |         |          |         |
| Drilling and Shooting  |         |          |         |          |         |          |         |
| Loading Rock           |         |          |         |          |         |          |         |
| Drivers or Motorman    |         |          |         |          |         |          |         |
| Unloading Rock         |         |          |         |          |         |          |         |
| Laying Track           |         |          |         |          |         |          |         |
| Bonding & Hanging Wire |         |          |         |          |         |          |         |
| Timbering and Misc.    |         |          |         |          |         |          |         |

Correct Tom Smith Foreman  
Checked Sam Miller Supt.

FIG. 7. DAILY TIME AND PROGRESS CHART

hole in the rib, into which is driven a wooden plug with its center near the desired grade point. Into the wooden plug drive a spad or track spike with the top face horizontal and leveled to the established grade, and attach to the spad or spike a small piece of cardboard or, better still, a board about 4 x 10 in., on which should be written complete information relative to that station.

For example, we would find the following information referring to the grade point, "Station 8 + 50, Point 2 ft. above grade." The established point should always refer to the elevation of the base of rail, and the elevation of the roof line should be understood to be a definite distance above, depending on the amount of clearance desired. These stations should be spaced every 25 ft., never farther than 50 ft. During the period of construction, the so-called strictly engineering features which demand attention are more or less limited to the restoration of lost sight lines and grade plugs and occasional inspections. There are,

TABLE I. DEGREE OF CURVE FOR MINE CURVES OF SMALL RADIUS

Computed from the formula  $R = (2.5 \text{ cosecant } 1/40D)$ ; assumed chord length = 5 ft.

| Radius of Curve<br>in Feet | Degree of Curve | Radius of Curve<br>in Feet | Degree of Curve |
|----------------------------|-----------------|----------------------------|-----------------|
| 50                         | 114.7           | 120                        | 47.8            |
| 60                         | 95.5            | 125                        | 45.9            |
| 75                         | 76.4            | 150                        | 38.2            |
| 80                         | 71.6            | 175                        | 32.8            |
| 90                         | 63.7            | 200                        | 28.7            |
| 100                        | 57.3            | 250                        | 23.0            |
| 110                        | 52.1            | 300                        | 19.1            |

be indicated in the daily report by filling the squares of the progress report at the bottom of the form with crosses, to express the estimated amount of work completed in that section. Thus a daily chart is sent to the administrative department as a record of both the work done and also the effective organization employed.

A final inspection of the completed roadway must be made for a dual purpose; first, to note that all plans have been followed and, second, to insure that all safety precautions have been applied where necessary. This inspection may best be made after the roadway has been placed in service, as a careful study of the operating features may result in the discovery of many improvements not evident when the original design was made. Perhaps these improvements cannot be applied to the system already in operation, but they may prove helpful when considering future extensions.

## Reducing Misfire Costs in Shovel Work

Many times one sees the steam shovel on a rock job "hung up" and doing nothing. On investigation, it is found that the crew has encountered some tight bottom, which the shot failed to lift. This means a delay of an hour or more, for the shovel cannot be advanced and digging resumed until the resisting material is redrilled and reblasted.

Again, a delay of several days may be caused by the discovery that there are missed holes with unexploded powder ahead. Naturally, the shovel crew is reluctant, or refuses, to proceed until the danger is removed. As a result the material often has to be carefully mucked by hand, and all this time the shovel is idle.

Obviously, in order to get the best out of a shovel it must be kept in continuous operation. Delays such as those mentioned are expensive and, if they occur frequently, may even disrupt the whole organization. In

order to avoid such accidents, more care should be employed in the loading of the charge and in the testing of the caps.

To get the maximum out of any explosive it is well to use strong detonators. In preparing for the use of a steam shovel in rock work where the material is wet, it is best to use a low-freezing gelatin of from 40 to 60 per cent. strength, depending on the character of the material.

Present prices of glycerin being high, contractors are trying lower-grade explosives and are finding that good results can be obtained from them where higher grades were formerly thought necessary. If the work is dry, a low-freezing dynamite can be used.

Gelatin explosives are best suited to tight, hard bottom, because it freezes less readily and combines density with high water-resisting characteristics. Density is an advantage in that more weight of explosive can be placed in the bottom of a borehole of any given diameter than is possible when lighter dynamites are used.

To obtain the best results, reliance should be placed only on well-proved brands of explosives. The promiscuous trying out of unproved brands may cause a lot of trouble and expense. It is not difficult to reduce the powder cost per ton or yard of material in almost any operation. The charge per hole can be arbitrarily reduced a pound or two with seemingly equal success; but as a result the shovel and drilling costs may increase and more than wipe out the apparent saving.

■

### North Bulli Coal Mines, Australia

The North Bulli, or Coaldale, coke ovens illustrated below are among the finest in New South Wales, Australia. They are of the Belgian oven type, 15 ft. long, 6 ft. 6 in. wide at the ram end and 6 ft. 9 in. wide at the dock end. The height from the floor to the crown of the arch is 6 ft. 4 in. The ovens are separated by walls 2 ft. 2 in. thick

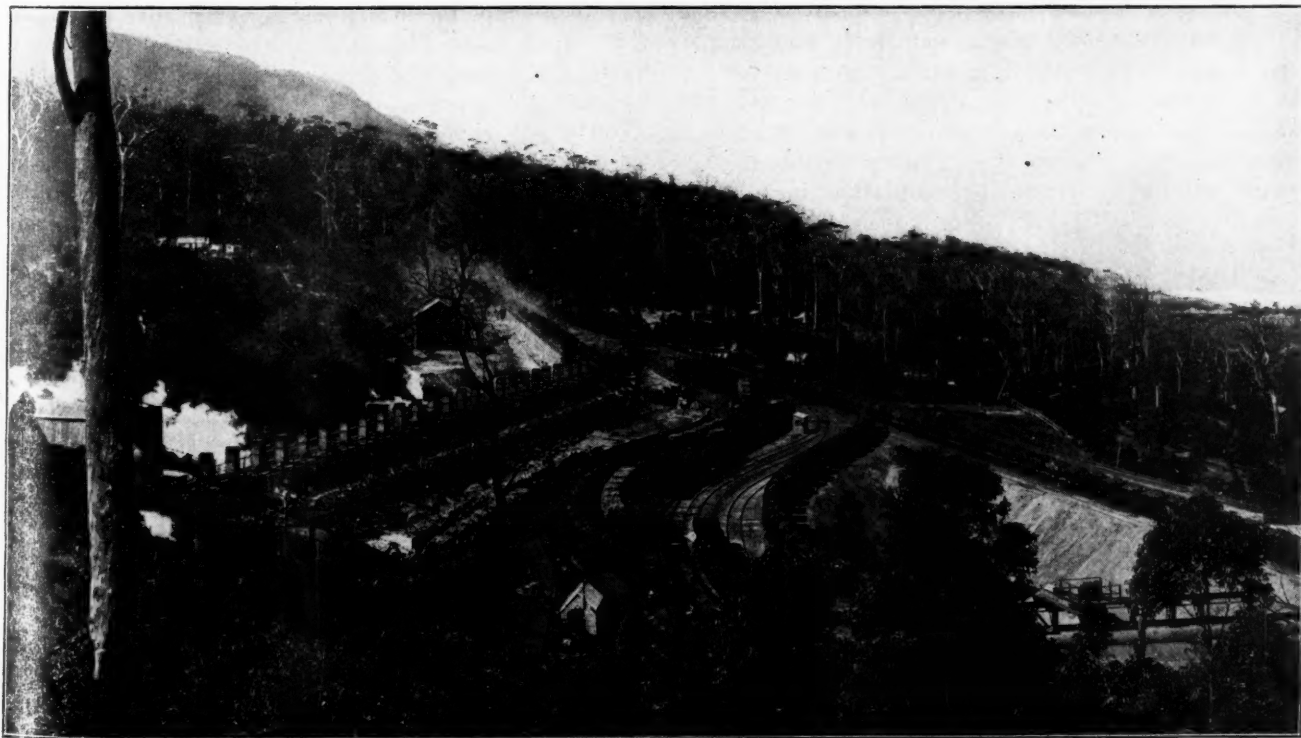
and surmounted by a covering of like thickness. The doors to the ovens are made with an iron frame faced on the inner side with brick.

To open the oven the doors are lifted, not shifted sideways as is usual in this country. They are suspended from a single rail track along which a rope passes operated by an hydraulic ram; and by means of this the doors are operated. All the watering is done inside the ovens as far as possible, so as to reduce the amount of moisture retained by the coke. There are in all 107 ovens. The coke ram and the boiler for generating the steam are mounted on one and the same frame.

The North Bulli Colliery, Ltd., started operations in 1902, though the mine dates back to a somewhat earlier year. Some coal is used for steam purposes, the large coal being used principally for bunkering foreign and interstate steamers in Sydney Harbor and the small coal for the power houses of the South Wales Government Tramways. About 40 per cent. of the coal is of the smaller size, and of this output about 75 per cent. is used for coking purposes.

The seam is about 5 ft. in thickness and has suffered a downthrow to the southwest of from 150 to 180 ft. The lower part of the seam and the floor have irregularly shaped lumps, which the mine workers term "brass," but which appears really to be carbonate of iron and not pyrite; in Australia as well as in the United States, the latter is quite usually spoken of as "brass." The coal has about 24 per cent. volatile hydrocarbons, 63 per cent. fixed carbon, 12 per cent. ash, 0.4 per cent. sulphur and 0.6 per cent. hygroscopic moisture, which would seem to denote an excellent grade of coking coal.

We are indebted to J. C. K. Burrell, 4 Connell St., Sydney, for the illustration. The text matter is culled from "Coal Fields and Collieries of Australia," by F. Danvers Power, and "Geology and Mineral Resources of the Southern Coal Field Part 1, The South Coastal Portion," by L. F. Harper.



MAKING COKE IN A EUCALYPTUS FOREST, NORTH BULLI, NEAR SYDNEY, NEW SOUTH WALES, AUSTRALIA



# Portable Miners' Lamps\*

BY EDWIN M. CHANCE†

*SYNOPSIS—The disadvantages of the oil lamp which led to the development of substitutes of various descriptions. Electric cap lamps have very largely reduced insurance rates. Development of the flame safety lamp practically at a standstill. Carbide lamp growing rapidly in favor.*

During the past 10 years, the safe and efficient lighting of the coal mines of this country has received an ever-increasing amount of attention. Several states have passed laws attempting to regulate the type of lamp to be used and the nature of the fuel to be burned, and the mining departments of coal-mining states have generally shown a keen and intelligent interest in this subject. The passage of the recent Employers' Liability Act in Pennsylvania has made it necessary for many coal-mining companies to take out liability insurance, and the companies underwriting such insurance have made it desirable for the insured to permit the use of none but illuminants of established worth.

While these conditions have not obtained for a sufficient length of time to permit the statement that the illumination of coal mines by portable lamps has been standardized, still, considerable progress has been made and the direction of future practice in this branch of coal-mining technology is very evident. Under these conditions it seemed that a review of the methods now used in coal-mine illumination, together with a brief consideration of the principles underlying these methods, might be of some interest.

Miners' lamps may be divided into three classes: The open light, the electric cap lamp and the flame safety lamp. It will be desirable to consider each of these classes separately, as each has properties peculiar to itself and one class is hardly comparable with another.

In this country, without question, the open light is the most generally used of all miners' lamps. This fact is explained by the relative freedom of a large proportion of our mines from gaseous conditions, and by the admirable systems of ventilation installed in those that show a tendency toward such conditions.

## INEFFECTUAL LEGISLATION GOVERNING THE USE OF OIL LAMPS

Up to a few years ago the open oil lamp had no rival in nongaseous mines and it is still very largely used, though its use is becoming limited, as will be shown later. The oil lamp has many disadvantages and the legislatures of a number of states have endeavored from time to time to remedy these defects by law. As the service given by an oil lamp varies largely according to the character of the oil, efforts have been made to fix by law the quality of the oil that may be sold to miners for use in these lamps. These efforts, unfortunately, have proved rather ineffectual, as the result has generally been to increase the cost of oil to the miner

without increasing its quality in anything like the same proportion. These laws, therefore, may well be considered one of the most potent of the forces that have driven the oil lamp out of its once strong position.

An example of the manner in which a law, that was honestly intended to be beneficial to the miner, failed of its purpose is found in the Pennsylvania Bituminous Mining Law of 1911. This law stipulated that oils sold for use in miners' lamps should not yield more than 0.11 per cent. of soot when burned in a miners' lamp under standard conditions. One of these conditions was that the flame of the lamp should be 1½ in. long. Now, low-grade oils when burned under these conditions yield as much as 1 per cent. of soot, while high-grade oils will give as little as 0.03 per cent. Thus it would seem, at first glance, that this law would considerably better conditions in the mines.

Such is not the case, however. Oils to pass this test must be very largely composed of costly fatty oils and this so greatly increased the cost to the miner that he was obliged to look for some cheaper illuminant. Moreover, instead of a flame 1½ in. long, the miner burns one of a maximum length because he wants as much light as he can get. I have found that while costly oils, containing high percentages of fatty ingredients, will produce much less soot than oils of medium price, and less fatty material, when burned under legal test conditions, these differences very largely disappear when these oils are burned under the conditions that obtain in the mines. With very long flames the high-priced oils still show a superiority to the medium grade, but the differential is so slight as to be of little real moment.

Indeed, the soot-forming propensities of both these oils under the conditions of use are so great that it is idle to attempt to classify one as better than the other. They are both very bad. Thus with a legal requirement of 0.11 per cent. soot or lower, we find the oil passing this test will give about 8 per cent. of soot when burned as it would be in the mines—that is, with a flame 5 to 6 in. long—while the oil that will not pass the legal requirement, giving under test conditions, let us assume, 0.5 per cent. soot, will make under actual working conditions about 9 to 10 per cent. soot.

Thus we may say that despite the greatly increased cost of the legal-test oil it is practically no better than many oils that may be secured at half or one-third the price. It is understood that many oils are of so low a grade as to be entirely unsuited for use in miners' lamps and, of course, these remarks do not apply to them. The point is that the tendency of many of the state laws is to increase the cost of oil very considerably to the miner and mine operator without proportionately improving its quality.

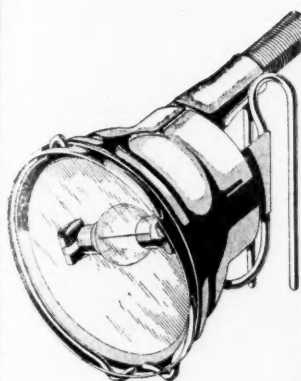
## FIRST SUBSTITUTES FOR THE OIL LAMP

One of the drawbacks to the use of the open oil lamp is the greatly increased fire risk where such lamps are used in dry workings. It is necessary for the user of such a lamp to renew its wick or lamp cotton at frequent intervals, and it is customary to pull out the

\*"Transactions," A. I. M. E.

†Consulting chemist and engineer, 390 South Main St., Wilkes-Barre, Penn.

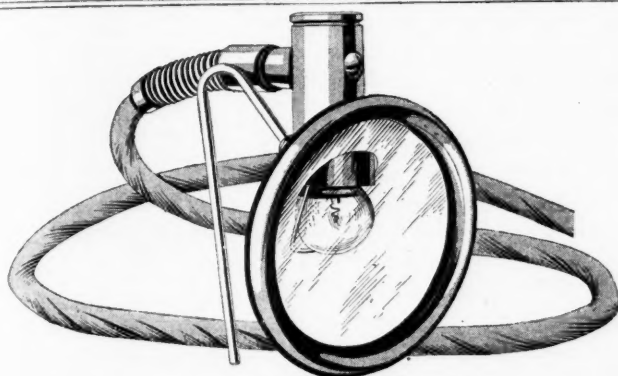




GENERAL ELECTRIC CO.



CONCORDIA SAFETY LAMP CO. ("CEAG")

PIONEER ELECTRIC MINE LAMP CO.  
("PIONEER")

WITHERBEE IGNITER CO. ("WICO")



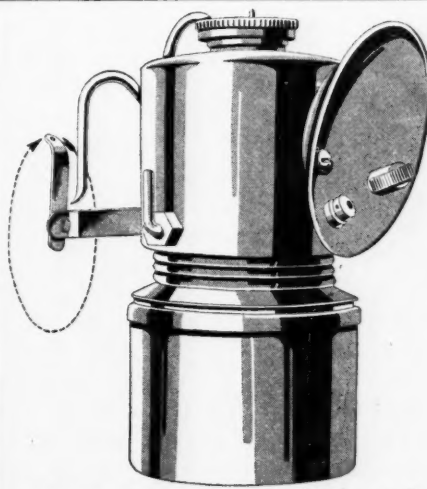
EDISON STORAGE BATTERY CO.



JOHN SIMMONS CO.



HUGHES BROS. ("PATHFINDER")



HARKER MANUFACTURING CO. ("BRITE-LITE")

#### VARIOUS TYPES OF ELECTRIC AND ACETYLENE HEAD LAMPS NOW USED IN COAL MINES

old cotton and insert the new while the old lies blazing on the ground. When the new cotton is in place and alight the miner places his heel on the blazing remains of the old, and perhaps extinguishes it; at any rate, he goes away and leaves it, to burn or not as may be.

Another source of fire is the shower of sparks that is blown from the wick when the wearer of the open oil lamp is traveling against a strong ventilating current. Together these are the possible causes of mine fires that has tended to make these lamps unpopular.

Of recent years a substitute for miners' oil, called "Miners' Wax" and a host of proprietary and brand names, has been placed upon the market. It is a paraffin wax obtained in the refining of petroleum and possesses the property of burning with a whiter flame than miners' oil and giving somewhat less soot. It must be used in a special lamp, however, as means must be provided for keeping it in a molten condition in the lamp fount. This is accomplished by conducting heat from the flame to the fount. Its use, though considerable, is decreasing

because the fire hazard with this illuminant is as great as with miners' oil, and it is troublesome to handle.

Undoubtedly the greatest advance made in the illumination of nongaseous mines is the acetylene or "carbide" miners' lamp. This lamp has come into general use during the past seven years and is now probably the most widely used of miners' lights.

The reasons for its popularity are not far to seek; in brief, it gives far more light than any other portable miners' lamp and costs less to operate. It gives a clear, white light in which objects have very much the same color value as in daylight. It makes no smoke or soot and its demands on the oxygen of the mine air are moderate. It gives more reliable indications of the presence of dangerous proportions of blackdamp than the oil-fed flame. It gives off no sparks and hence decreases the fire hazard very considerably.

It may thus be seen that this type of miners' lamp has benefits for the mine operator and the worker and is liked by both. I understand that insurance companies underwriting the insurance of many coal-mining companies under the new Pennsylvania Compensation Act have recognized the safety features of the acetylene miners' lamp by giving credits on the insurance rate where such lamps are used in nongaseous mines.

#### CARBIDE LAMP PROVIDES AN IMPROVED MEANS FOR TESTING BLACKDAMP

Some years ago, considerable uneasiness was felt among mining men because it was thought that the acetylene lamp failed to give adequate warning of the presence of blackdamp. In the past, blackdamp had been believed, by many, to be an atmosphere in which a lamp would not burn, the reasoning being along these lines: If an oil lamp goes out, it is because there is not enough air (meaning oxygen). Now it is a fact that the acetylene lamp will burn where an oil lamp will not. Hence, if the oil lamp will not burn there is no air, and as the acetylene lamp continues to burn, this indicates that the acetylene lamp will burn without air. Therefore, a man may carry an acetylene lamp into an atmosphere containing so little air that he may be rendered unconscious, and still his lamp will give no indication of the dangerous condition of the atmosphere.

The facts of the matter are these: The oil-fed flame requires a minimum of about 17½ per cent. of oxygen for its maintenance; the acetylene flame requires about 12½ per cent.; and a man's life is endangered should the oxygen content fall much below 10 per cent. At about 14 per cent. of oxygen, however, the color of the acetylene flame changes markedly. It loses its brilliance and illuminating power, and becomes greatly elongated and unstable.

From these data it will be seen that the miner is given obvious and adequate warning of the vitiation of the atmosphere through deficiency in oxygen. While this warning is not so peremptory as that given by the oil lamp, still it is of ample distinctness for men to appreciate and value, and above all, it is essentially a real danger warning.

On the other hand, the warning of the oil-fed flame is given with so high an oxygen content that miners have learned to disregard it, and will frequently go into workings containing air in which their oil lamps will not burn. They know that they can live in an atmosphere

in which these lamps will not burn, but do not realize that, once in the dark, they have no further guide to the quality of the atmosphere and that in a few feet it may become lethal. Such is not the case with the acetylene lamp; its warnings are given so near to the danger point that men will have a wholesome respect for them, to the great increase of their own safety.

While I have heard of cases in which men after working with acetylene lamps in sections in which oil lamps would not burn became sick when brought into fresh air, these always proved to be based upon a fallacy.

Upon investigation, the fact has always developed that the disability of the men was due to other causes—too high a temperature of the workings or carbon monoxide being the most usual. In any case the presence of the disturbing agency would not have been detected by the use of oil lamps. Indeed, the writer has many times

seen men fall like flies in a place they had considered safe, because their oil lamps gave no indication of anything abnormal in the composition of the atmosphere.

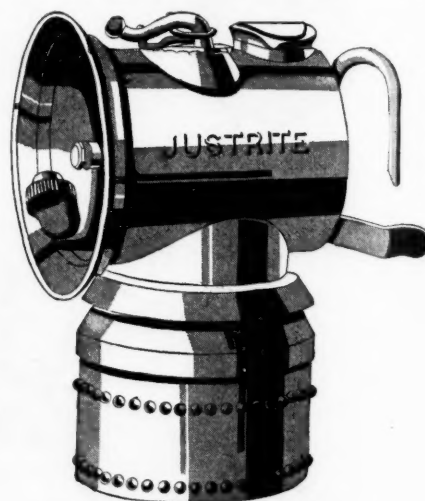
The supposed danger from the use of acetylene lamps where blackdamp may be encountered has caused their use in pillar work and in robbing to be discontinued to some extent, thus exchanging a danger of the imagination for a very real peril. Those familiar with the coal-mining industry know what a curse miners' asthma has been. If not caused, it is at least aggravated, by the greasy soot and oily emanations given off by the oil lamp.

Now these foul vapors are at their worst in pillar work and in robbing where the ventilating current is apt to be at its lowest ebb and where blackdamp is obviously most likely to be encountered. Hence, as a result of trying to safeguard the miner against the hypothetical danger—of a combination of blackdamp, the acetylene lamp and his own stupidity—we expose him to the very real and pressing danger of miners' asthma.

The deepening of our mines and the increased length of airways, together with the greater attention now given to the danger of gas and dust explosions, have all tended to increase the number of safety lamps in use. Safety lamps may be divided into two classes: The electric cap lamp and the flame safety lamp.

#### THE ELECTRIC CAP LAMP

The electric cap lamp is a development of the last seven or eight years and its growth has been very lucidly traced by J. T. Jennings in a paper read at the 1916 meeting of the Coal Mining Institute of America. It will therefore be unnecessary for me to go deeply



JUSTRITE MANUFACTURING CO.  
("JUSTRITE")



into this matter. European practice has tended toward the development of an electric hand lantern. Because of the more general use of flame safety lamps there, their mine workers were satisfied with this type, being accustomed to the inconvenience of hand lamps.

In this country, however, conditions are radically different. The miners are, as a general rule, accustomed to open lights worn on the cap and rebel at the inconvenience and inefficiency accompanying the use of the electric hand lantern. Hence, when an electric miners' lamp was developed it became essential that it should be such that the efficiency and convenience of the cap lamp would be retained. Progress was made along these lines with the result that the present very convenient equipment has been developed.

It is remarkable that so complete a standardization in general design as is now found among the product of the numerous manufacturers of this type of lamp should have been possible. The credit for this should be given without stint to the Bureau of Mines. This bureau has worked hard and faithfully with the manufacturers of electric cap lamps for the past four years or so, and has had a very definite vision of what such a lamp should be. The result of this prenatal influence is a startling similarity in the various equipments offered to the mining industry. While this method has perhaps sacrificed a little individuality, it has undoubtedly increased the average excellence of the product and made the whole industry more robust by weeding out the abnormalities.

Technical literature has been so full of descriptions of various types of miners' electric cap lamps that it will not be necessary to describe any in detail; it will suffice to touch upon the general advantages and disadvantages of this type of lamp.

Many of the underwriters of insurance under the Employers' Liability Act have shown a marked preference for the electric cap lamp when compared with the flame safety lamp. This preference has led to the penalization of companies using the flame safety lamp, to the extent of 11c. for each \$100 of pay roll, whereas, were electric cap lamps installed, this penalty would be wholly removed. This premium has led to the installation of many electric cap lamps.

This lamp throws its light into the plane of vision of the wearer so that its light is efficiently utilized. It leaves the miner's hands free and the light requires no attention; indeed, the outfits are so arranged and locked that it is impossible for the wearer or any unauthorized person to tamper with them. There is no fire risk with these lamps, and I am assured by the Bureau of Mines that the danger of their originating a gas explosion is practically nil. These are also the safest of all lamps with which to handle explosives.

They have three chief disadvantages: Their upkeep is high, the flux of light they furnish is not so great as it should be, and their wearer is in absolute ignorance, so far as the lamp enters into the matter, of the nature of the atmosphere surrounding him. It is very probable that the next few years will see these faults abated to a considerable extent.

That the flame safety lamp should be so old, so widely used, and so little improved in all its years of service reflects but scant credit upon the human mind. To all

intentions and purposes we still have Sir Humphry Davy's invention in actual use, development having practically stopped after introducing the use of a cylinder of glass to surround the flame. In this country the bonneted Clanny and Wolf type are practically standard except where heavily pitching veins are encountered, as in the Schuylkill anthracite district. Here, because of its lightness and the convenience with which it is handled on the pitches, the old Newcastle Davy is still supreme.

The flame safety lamp is principally handicapped by the meager light it gives. Its use is absolutely essential as an indicator of the quality of the mine air in all gaseous mines, and I would suggest that even in non-gaseous mines, where electric cap lamps have superseded open lights, the installation of a number of flame safety lamps would be an added safeguard.

The principal difficulty in the use of the flame safety lamp as an indicator of atmospheric conditions, where electric cap lamps are relied upon for illumination, is that unless the flame lamp is the source of light it will come to hang unnoticed on the miner's belt or be left neglected in a corner of his working place. In other words, unless his attention is automatically called to it from hour to hour, he will, in the long run, cease to note its warnings.

While the variations of the Davy principle on which flame safety lamps are constructed have been endless, these variations have been slight, and the principle has not been diverged from with any success. As a result, the flame safety lamps in actual use in this country are of two very similar types, the Clanny and the Wolf, as has been mentioned above, ignoring the Davy lamps used in the southern anthracite district of Pennsylvania, for these will soon disappear.

With the design of the lamp fixed, we have but one variable to consider and that is the fuel burned. Even this disappears in the case of the Wolf lamps, as these will only function with naphtha whose composition may vary within but narrow limits. With the Clanny type lamp, however, a wide variation in the nature of the fuels is possible. Among these are sperm, peanut, lard, rape, seal, cottonseed and mixtures of these with mineral burning oils. I have spent much time in investigating the question of improving the quality of safety-lamp oils and have met with some success in this direction. It has been found that some of the most costly and highly prized safety-lamp oils were really inferior to mixtures containing high proportions of high-grade mineral burning oils. These mixtures burn with a whiter flame, give appreciably more light, do not crust the wick and are much cheaper than the standard safety-lamp oils.

#### RESULTS WITH DIFFERENT LAMPS

There is another type of lamp that holds out promise for the future. This is the acetylene safety lamp invented by T. M. Chance, of Philadelphia, and described in the discussion of R. P. Burrows' paper on coal-mine illumination.<sup>1</sup> As this lamp is not yet a commercial fact, but little can be said of it definitely. It would seem, however, that it combines the safety and indispensable gas-detecting properties of the flame safety lamp with many times the illuminating power of the electric cap lamp.

<sup>1</sup>Trans., A. I. M. E., Vol. 54, p. 34 (1916).



A table is appended containing data that may make more intelligible some of the statements in this paper. These data have been accumulated during the past eight years and are general averages. The photometric determinations were made upon a United Gas Improvement Co. 60-in. bar photometer. The photometric standards used were 10-volt tungsten lamps, prepared and calibrated by the National Lamp Works, and standard sperm candles.

It will be noted that no estimate of the cost per day of electric cap or flame safety lamps is given in the table. In my opinion, the modern electric cap lamp has not been in use long enough for an intelligent opinion of its upkeep cost to be formed. Moreover, the labor charge on both the electric cap and flame safety lamps is so large, and varies so much with the size of the installation that such figures as could be given would have but little meaning.

CANDLEPOWER OF VARIOUS TYPES OF PORTABLE MINERS' LAMPS

|   | Candlepower | Cost per Shift, Cents |
|---|-------------|-----------------------|
| Miners' open oil cap lamp.....          | 1.50        | 2.4                   |
| Miners' open acetylene cap lamp.....    | 5.00        | 1.5                   |
| Electric cap lamp.....                  | 1.10        |                       |
| Davy safety lamp.....                   | 0.12        |                       |
| Clanny safety lamp.....                 | 0.35        |                       |
| Wolf-type safety lamp.....              | 0.65        |                       |
| Akroyd and Best safety lamp.....        | 1.10        |                       |
| T. M. Chance acetylene safety lamp..... | 3.80        |                       |

Note.—The above candlepowers are in no sense maximum, but are the average values over the field illuminated by the lamp in question and have been obtained from many determinations. These are the values that may be expected to be realized in practice under working conditions.

#### CONCLUSIONS

1. The open oil lamp has outlived its general usefulness. It still has a field, however, in special cases, such as those of drivers, motormen, trip runners and the like, who are obliged to work in swift air currents.

2. The use of the open acetylene lamp is growing in all nongaseous mines because of its cheapness, the powerful light it gives, its reliability in the presence of black-damp and its freedom from the production of soot and noxious vapors.

3. The electric cap lamp is best adapted to use in gaseous mines. Its flux of light is superior to that of the flame safety lamps now in use. Moreover, as it leaves the hands free it is more convenient than the flame safety lamp. Under especially drastic conditions in nongaseous mines, where the fire risk is unreasonably high due to peculiar local conditions, its freedom from fire hazard recommends its use. In all gaseous mines its use must be accompanied by that of flame safety lamps, in order that the condition of the atmosphere may at all times be known in all parts of the mine.

4. The flame safety lamp should be used in all gaseous mines irrespective of the use of electric cap lamps. These lamps form in themselves the best and most trustworthy gas detector yet devised, and their presence is absolutely essential to the safe operation of such a mine. Even in nongaseous mines, where electric cap lamps have replaced open lights completely, it is good policy to have a liberal proportion of flame safety lamps. The flame safety lamp is doubtless an unsatisfactory working light, but its rôle is twofold. It may be used as a working light, but it must be used as a gage of the safety of the mine atmosphere.

5. There is a new acetylene safety lamp that gives promise of being an admirable working lamp as well as an excellent firedamp and blackdamp detector.

## Successful Briquetting of Coal

BY A. L. STILLMAN\*

There have been, during the past 20 years, various efforts made to reclaim the waste from anthracite mines and the screenings of bituminous coal. In Europe the practical solution was reached many years ago, in the form of coal briquetting. In Germany the last reports at hand show that fuel briquetting is a widespread and lucrative industry—nearly 26,000,000 tons a year is handled and sold, the greater portion being briquets of soft coal pressed into large sizes.

In this country the story of briquetting has not been one of unqualified success up to recent times. Railroads and power houses have had an abundance of cheap fuel, while the domestic market was slow to accept the briquets that were originally turned out. Owing to the fact that a hard pitch binder was used—because this was the binder usually accepted abroad—certain irremediable defects in the briquets thus manufactured militated against their successful sale.

It was found, in the United States, that, where tar or pitch was used to bind coal dust into briquets under the usual simple process, no lasting commercial success could be realized. The briquets could not be sold at a price low enough to justify their defects as against the quality of anthracite coal commonly marketed. In fact one of the greatest difficulties the briquetting engineer and salesman encounters today is the widespread prejudice born of early briquet failures.

It was in Utrecht, Holland, that a really scientific and commercially successful answer to this problem was evolved. Two names are associated with the successful process which, from the country in which it was developed and the quality of binder usually employed in connection therewith, has been termed the Dutch oil process. These names are Basneau and Van Hall. Investigations at Utrecht, under the auspices of these men, developed the facts that the method of pressing the briquet into shape was secondary to the quality of binder used and that the quality of binder was secondary to the method of preliminary treatment or mastication.

In place of the usual pitch and tar binders they substituted oils of various kinds, the cheapest being black oil residuum. Instead of the ordinary paddle mixer usually employed for mixing coal and binder they introduced the use of the edgerunner, whereby a powerful crushing with simultaneous intermixing is applied to the materials as a preliminary to the pressing operation. It was found that cohesiveness in the binder was not essential when the coal was treated in this way. Under the action of the edgerunner, or masticator, a chemical absorption between the coal and the oil takes place whereby an actual compound is formed. This compound is a homogenous fuel of high thermal value. Microphotographs taken of briquets so made show a complete absorption of the oil by the coal, with the result that the product is, in effect, lump fuel.

Felix A. Vogel, president of the General Briquetting Co., 25 Broad St., New York City, seeing the process in operation at Utrecht, was quick to realize its possibilities for the American market. Working in conjunction with the Malcolmson Briquet Engineering Co., of Chicago, Mr. Vogel has succeeded in demonstrating, at first

\*25 Broad St., New York City.

experimentally and later commercially, the complete adaptability of the Dutch oil process to American conditions and the suitability of the resulting briquets to the uses of American consumers.

In briquetting, the signpost of success is the repeat order. Both the Lehigh Coal and Navigation Co., operating a plant under this process for anthracite coal, and the Berwind Fuel Co., similarly operating with Pocahontas coal, report sales to the capacity of the plant and a demand beyond it. Eighty per cent. of the orders received by these firms are from satisfied users. Such an experience has not been without its effects.

Being successful for almost all purposes, the briquet as now manufactured bids fair, in ensuing years, to become a vital factor in solving the fuel question.

## Who's Who In Coal Mining

### William D. Owens

For the past 40 years, William David Owens has been one of the honest and industrious toilers of the anthracite region of Pennsylvania. During all that period, Mr. Owens has been continuously employed by the Lehigh Valley Coal Co., serving in different capacities from general workman to division superintendent.

Mr. Owens was born Nov. 10, 1846, in the little town of Cynffig Hill, near Pyle, in South Wales. He entered the mines, as trapperboy, when 9 years of age. Three years later, the family moved to Briton Ferry (Llansawel), South Wales, where they remained 6 years and then removed to Gwndare, near Aberdare, South Wales. Young Owens was now 18 years of age, and had worked in the mines continuously, which seriously interfered with his early education. He knew little or nothing of the English language, as all his associations were with the Welsh people, who spoke the vernacular of their country.

At the age of 22 years, Mr. Owens married Margaret Lewis, daughter of Llewelyn Lewis, and took up his abode in the Rhondda Valley, working as a miner, at which occupation he earned a good livelihood. Always ambitious, it was not long before Mr. Owens felt the need of more education. He studied the English language and soon after applied himself assiduously to the study of mathematics and the simple sciences, attending for this purpose a local branch of Kensington School, London.

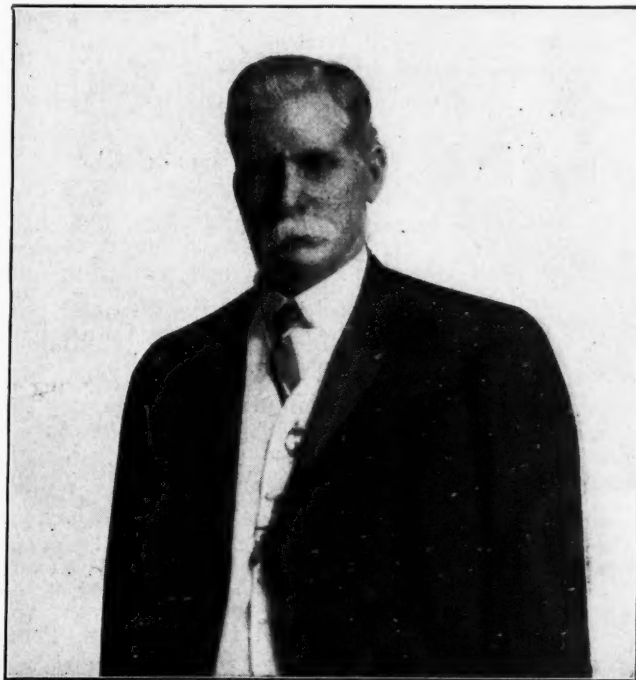
Our time-honored friend proved an apt student and, having completed his course at the school, he took the examination required by the mining laws of Great Britain to qualify for the position of colliery manager. He passed the ordeal successfully, and in due time received his certificate. In 1876, he was appointed to the position of colliery manager of the Fernhill colliery, in the Rhondda Valley, South Wales.

Two years later, after having served in every branch of mining, working in anthracite, semi-anthracite and bituminous mines, employing both longwall and chamber methods of mining, Mr. Owens decided to migrate to the United States. The same year (1878) found him located in the small mining town of Plains, near Wilkes-Barre, Penn., where he at once entered the employ of the Lehigh Valley Coal Co., working for 6 years as a miner and dayman employed on general work.

Mr. Owens' faithful service in this humble capacity was rewarded, in 1884, by his appointment as mine foreman of the Wyoming colliery. Ten years later, he was promoted to the office of district superintendent, with headquarters at Pittston, Penn. In 1905, he was again promoted and became superintendent of the Lackawanna Division, which office he held up to the time of his retirement, owing to failing health, Feb. 1, 1917.

Mr. Owens was a fond lover of music. He devoted his spare hours to the training of choirs, both in church and societies, and competed in several eisteddfods. In these contests, the choirs trained by Mr. Owens were always successful in taking the prize, which was divided on but two occasions. He is a member of the Welsh Congregational Church at Pittston, where he has led the choir for many years.

Mr. Owens is a member of the North of England Institute of Mining and Mechanical Engineers, as well as the American Institute of Mining Engineers and the Engineers' Society of Northeastern Pennsylvania. In the



WILLIAM DAVID OWENS

summer of 1911, Mr. Owens was honored with the appointment, by Governor Tener, to serve as a member of the commission to revise and codify the anthracite laws of the State of Pennsylvania. Four years previous (1907), Mr. Owens had been appointed by Governor Stewart as a representative of the state, to attend the Mining Congress at Joplin, Mo.

Though not a graduated engineer, Mr. Owens has frequently been called in consultation with mining engineers on important cases. His long practical experience in mining under different conditions, many of which have subjected him to dangerous undertakings, has well fitted him to act as adviser on such occasions. His experience in three fatal explosions in South Wales and his later work in the gaseous mines of the anthracite region have matured his judgment and made it valuable. The construction of a large dam that prevented the inundation of the Hillman vein, in the Wyoming colliery, in 1891, was one of Mr. Owens successful ventures.



## War Sidelights

*Under this heading in Coal Age each week we hope to publish items relating to war measures as they affect the coal-mining industry. We earnestly invite all our readers to send us interesting notes covering happenings which bear on the war, either in a military or an industrial way.—Editor.*

✻

British coal miners are now exempt from military service. It may be necessary to exempt the miners in this country before the war is over.

Irvin Snyder, Joe Klova and Joe Zimmerman, Lykens colliery employees, left for Fort Slocum, where they have been ordered to report, having enlisted at Harrisburg.

At No. 6 colliery of the Pennsylvania Coal Co. a flag was unfurled on Saturday, Apr. 21. The flagstaff is one of the highest in that section of the state. W. P. Jennings, district superintendent of the company, presided at the flag raising.

The residents of Dorothy, W. Va., a mining camp of the Four States Coal Co., showed their patriotism when they joined in raising the Stars and Stripes. The Rev. Sheriff made a short address. The Dorothy Cornet Band played "America" and other patriotic airs.

Employees of the Pennsylvania Coal and Coke Co., at Ehrenfeld, Penn., purchased and unfurled a flag in the presence of 3000 men, women and children. William Hale, a veteran of the Civil War, hoisted the flag. A Polish society and a Slavish society were in the parade that followed after the flag-raising ceremonies.

The Harleigh-Brookwood Coal Co., Hazleton, Penn., has distributed flag buttons to all of its employees with a note reading: "To our employees—As American loyal citizens, as admirers of American principles or as friendly aliens, may we ask you to wear the flag button and to honor and support the flag during the present international crisis?"

The employees of Montour No. 4 mine, of the Pittsburgh Coal Co., in Pennsylvania, had a flag raising at the plant at Hills Station, Washington County, at 6 o'clock Tuesday night. Patriotic songs were sung, and the flag was raised by two of the employees who have recently enlisted. The whole town was present, and there was lots of enthusiasm.

The lack of coal, on account of transportation difficulties, is making itself felt more and more in large parts of Germany. Because almost every available car is needed for military purposes, and the transportation of fuel and raw material to ammunition factories, the Government finds itself unable to supply private firms and householders with the coal needed.

The Superior Colliery Co., in Ohio, has offered the Government, through Major U. S. Worrelow, of Cincinnati, in charge of recruiting, the use of the windows of the Superior store, or any other part of the store, for displaying munitions of war, or for any other purpose for which the Government may desire. The offer was made by U. S. Morris, president of the company.

An Austrian, "Nick" Toronick, was badly beaten up for making a disrespectful remark about the American flag. He is a miner at the Patterson mine of the United Coal Co., Elizabeth. On being asked to donate a small sum toward the purchase of a flag to be raised on the tippie the remark in question was made. He was rendered unconscious by the pummeling he received.

There is a threat of demoralization in Germany, but she is still tremendously strong, and will take a lot of beating. The Allies ought to stop the unprofitable business of underrating her. Even yet she alone among the combatants is thoroughly and expertly military. The others have not learned to think in strictly military terms. Meanwhile, in weight, numbers and machinery, the advantage lies overwhelmingly with the Allies.

A committee of the U. S. Chamber of Commerce states that the burden of taxation can be made lighter for all citizens if it is clearly understood that waste and extravagance—undesirable at all times—tend in wartime to seriously increase the cost of the war. An excess profit tax should be a war measure only. It can be justified only when war exists. In European countries it is now generally admitted that far heavier taxes should have been imposed at an earlier stage of the war.

The Consolidation Coal Co., of Fairmont, W. Va., has had 500 copies printed of President Wilson's proclamation concerning the planting of crops to aid in the nation's struggle for civilization, and these have been distributed where they will do the most good. The Welfare Department of this company expects soon to adopt a novel means of arousing interest in gardening. Open air lectures illustrated with tinted lantern slides will be given from time to time in the mining communities where this work is being undertaken.

At the eleventh annual banquet of the Pittston Mining Institute on Apr. 21, 850 members adopted resolutions pledging themselves to uphold the hands of President Wilson in the national crisis and, specifically, to do their utmost to maintain the coal output to the point where it would meet the demand of a nation at war, even to working longer hours. The banquet resolved itself into a great patriotic rally, with terrific applause greeting the appeal by Capt. W. A. May in his address to each man to "do his bit" in the nation's service.



By a recent executive order "defensive sea areas" on the coasts of the United States and its insular possessions have been officially promulgated as a precautionary measure. These areas may not be crossed at all by any vessel between sunset and sunrise, and at other times only with express permission of the harbor entrance patrol. A vessel arriving off a defensive sea area after sunset shall anchor or lie to at a distance of at least a mile outside its limits until the following sunrise. Vessels discovered near the limits of the areas at night may be fired upon.

G. A. Burrell, consulting chemical engineer, of Pittsburgh, Penn., and for eight years in charge of gas investigations of the Bureau of Mines, has been selected by Mr. Manning, director of the Bureau of Mines, to take charge of research work on matters pertaining to gas warfare. Mr. Manning is chairman of a committee of the National Research Council. The latter is a branch of the Council of National Defense. Mr. Burrell's task is to organize and set working technical forces, wherever available in the Bureau of Mines, colleges and research institutions of the country, on many problems in connection with gas warfare.

James H. Stewart, State Commissioner of Agriculture of West Virginia, has received numerous replies from coal and lumber men who have agreed to place thousands of acres of land at the disposal of the employees for agricultural purposes, in order to increase the production of food in that state. Mr. Stewart has suggested that available vacant lands be turned over to employees for crop raising. In former years practically all the green stuffs used in the coal fields were shipped in, and practically none of the food consumed was grown in the immediate vicinity. One company has offered 10,000 acres to its employees, and several have offered to fence in gardens and furnish seed at cost.

Too young to go to war, but nevertheless filled with a patriotic desire to do their "bit" some 15 to 20 boys, the sons of employees of the E. E. White Coal Co., in West Virginia, have formed themselves into a "Planting Club" and are actively at work planting potatoes and garden vegetables. The boys have taken up a good-sized plot of cleared and fertile ground and are working under the personal direction of Frank Foote, Agricultural Agent of Raleigh County. The coal company has allotted the garden site free of charge, has furnished seeds and seed potatoes and all gardening tools, and will lend the boys full and hearty support to insure satisfactory crops. Mr. Foote has recently lectured on gardening, at Glen White and Stotesbury, W. Va., for the benefit of the adult population, and this season bids to be the banner crop year at both places. Glen White in particular, with its broad expanse of rich bottom lands, offers the ideal home and gardening sites that mean so much to the mine worker and his family larder during these times of ever-rising prices. The coal company furnishes all fencing, and has its engineers stake off a plot for every employee that requests it.

Miners of Indiana, especially around the Terre Haute field, are not letting a day pass without some sort of a patriotic demonstration, and practically every mine bears

an American flag at the highest point of the tippie. On the miners' trains, as the men are returning home, it is a regular occurrence for a collection to be taken up among the men for a flag. The first ceremony held during a flag raising was at the Oak Ridge Coal Co. mine near Staunton on Sunday, Apr. 15, when a 30-ft. staff was placed on the highest part of the boom shovel. In less than 20 minutes a collection was taken from among the miners to purchase the flag, and a crowd of 2000 witnessed the program. On Friday, Apr. 20, a large flag was raised above the tippie of the Sanford mine at Sanford by the local union of the United Mine Workers of America. It measures 16 x 24 ft. and is 515 ft. above the ground, the highest flag between Indianapolis and St. Louis. To round out the celebration 100 lb. of black powder was exploded just as the breeze caught the flag and spread it out. Around the Clinton field such demonstrations were generally headed by foreigners, whose next step was to hurry to complete the citizenship requirements and obtain naturalization papers.

For war purposes Federal taxes will be practically doubled during the year. This means that every business interest of the country will contribute to the prosecution of the war. The immediate effect will be felt by the coal interests in the proposed increase in taxes on incomes and excess profits.

A committee from the Chamber of Commerce of the United States has in effect indorsed the proposed tax plans, which are now under consideration by the Ways and Means Committee of the House. It was suggested, however, that some alterations be made in the excess profits tax, which in many particulars is objectionable to all persons who have capital invested. The special committee from the National Chamber in its report said the following:

We believe an excess profits tax should be, in principle, a war measure only. It can be justified only when war exists. All business should pay its share toward war expenses but this tax should be levied so as to disturb as little as possible the financial machinery and the industrial progress of the country upon which the welfare of the nation is in so large degree dependent.

After careful consideration the committee recommends the plan recently suggested by the Secretary of the Treasury. Some amendments, however, are absolutely necessary to remove inequalities that will certainly arise from the present working of the law. Where high rates are levied it becomes more and more important that careful provision should be made for ascertaining more clearly and fully what is meant by the term "capital invested," also, how profits are to be determined. As these are the foundations on which the plan is built they must be firmly and clearly established.

The proposals now before the committees of Congress contemplate making both the increased income taxes and the increased excess profits taxes retroactive. It has been suggested to Congress by the Administration that these taxes be made to apply not to this year's earnings only but also to the earnings of 1916. The National Chamber of Commerce declared that the retroactive tax in excess profits is not only wrong in principle, but is also unjust because it proposes to levy a tax on profits of 1916 which have already been distributed. The retroactive tax on income, it was declared, is likewise wrong in principle, and if it is imperative for the Government to obtain the amount which would be raised by such a tax it would be more equitable to impose somewhat higher super-taxes on individual incomes during the present war.

# The Labor Situation

## General Labor Review

Wages in the coal field are being quite generally revised upward. This week it is the anthracite and central Pennsylvania wage scales which are under revision. The successful outcome of the anthracite conference and the difficulties preventing agreement in central Pennsylvania are treated here-with under appropriate heads.

The international president, John P. White, will probably soon send representatives to the Southwest to readjust a wage scale which has only just been arranged after months of dickering. Oklahoma only settled its differences last January, and Texas finally signed its contract nearly two months later. The contracts in both these sections, however, were largely if not entirely based not on the conditions at the date of signing, but on settlements of prior date in other districts which settlements were themselves based on conditions obtaining on Apr. 1 of last year.

Mr. White has been invited to make arrangements for representation at a conference with the operators of the Southwest region to be held at Kansas City. The operators of Kansas, Missouri and Oklahoma will be present.

### Increases in Nonunion Irwin-Greensburg Field

The coal operators of the Irwin-Greensburg field have also given their employees a wage increase which varies from 17 to 25 per cent. It will become effective May 1.

The scale of wages paid for pick-mined 3-in. lump has been raised 10c. a ton. The machine-mining rate on coal of that size is increased 10½c. Day labor will receive an advance of 60c. a day, the monthly men participating. As the men in the Irwin-Greensburg field received an advance last December, the wage paid them has been increased more in recent months than in the union fields adjacent.

The increase affects more than 12,000 men and will mean an increased payroll of \$2,000,000 per annum.

Turning from questions relating to the wage scale and briefly taking the districts in order, it may be now said that the anthracite region is working more steadily than for some months. In the northern field, with the closing of nominations of officers, John T. Dempsey and his staff seem sure of reelection in June. There will be no organized opposition to the present administration of the union. This unanimity is quite unusual. As a rule the district president and most of his staff face a strong factional fight and even a contest of the tellers' report.

### Operators' Suit Against Mashannon Co. Withdrawn

In central Pennsylvania the strike called for Apr. 18 was put off, as the operators consented to meet the mine workers on Apr. 17 at Philadelphia. It will be recalled that Congressman Charles Rowland, of the Moshannon Coal Co., raised wages 33½ per cent., and the Coal Operators' Association of Central Pennsylvania obtained a preliminary injunction against him because, as it alleged, he was breaking his pledge to the association that he would pay the mine workers the bargained wage, and that only. Judge Bell of the Clearfield County Court dissolved this injunction recently.

Somerset County conditions are quiet except that at Hooversville the few mine workers remaining on strike are trying unsuccessfully to induce the working men to quit work. At Holsopple the Maple Ridge Coal Co. has succeeded in getting a few men to work, and the number is gradually increasing despite the work of the agitators.

On Apr. 13 the employees of the Rich Hill Coal Co., numbering between 250 and 300 men, returned to work after having been idle for more than two weeks. J. H. Allport, for the coal company, is said to have agreed that a certain official of the concern would work for no longer than 10 days and then leave the service of the company.

After a strike lasting 13 months, the Hicks interests on the Kiskiminetas River in western Pennsylvania have concluded an agreement with the union conceding the miners increased pay and union recognition. About 3000 miners are affected.

Frank Farrington, when in the conference in New York, most indignantly denied that the United Mine Workers were contract breakers, and he could safely deny it for himself and quite a few of his coadjutors. Mr. Farrington was greatly chagrined to find a strike had broken out on Apr. 29 at the

Nokomis, Witt, Pawnee and Kincaid mines of the Peabody Coal Co. The contract was made on Apr. 17, and the men were already breaking it flagrantly on Apr. 20. Farrington sent Harry Fishwick, the vice president, and T. J. Reynolds, of the mine workers' board of arbitration, to investigate the strike, and he himself, convinced that German influence was back of the strike, conferred with Governor Lowden in reference to the starting of an official investigation as to the animating motives of the strikers.

Apparently only the motormen struck, but 2500 men were laid idle. The story was told around the mines that the southern Illinois miners were getting \$1 a day more than the miners in central and northern Illinois. Farrington ascribed the story to malice. As a result of such rumors the miners also became discontented. The drivers are contending for a 10-hour pay for 8 hours of work, the new wage scale to be the basis of computation. The officials of the United Mine Workers threaten to take away the charter of the local union if the men do not return to work immediately.

### Operators' Lockout Defeats Missouri Strike

The 50 mines in Missouri which were closed Apr. 9 by the operators because miners of the Big Creek Coal Co. mines near Kirksville, Mo., had disregarded the contract, were operating again Monday, Apr. 16. The atmosphere is said to have been cleared by the lockout, and the prospects are that, at least in Missouri, contract obligations will be regarded more seriously. The effect on Kansas, where there have been many strikes in direct violation of the contract, will also, it is hoped, be favorable.

D. A. Frampton, the president of District 25, who took office Apr. 1, was asked to order the mine workers back to work but he refused. Thereupon the lockout was called and Frampton went to Kirksville and investigated the situation. He then declared that the men had violated their contract, and he ordered them back to work. The miners showed their good faith by getting ready for work on Sunday for the operation of the mines on Monday morning, and under the instruction of the officers of the operators' association all the Missouri mines resumed operations.

### Miners in Canada Get Increase of 15 Per Cent.

It seems as if some agreement has been reached in western Canada by which an increase in wage of 15 per cent. is granted to the men. The subcommittees at least have agreed and the local unions have voted on the proposition by ballot with a result not yet known.

The agreement is to last for two years subject, however, to revision in case of extraordinary conditions with relation to the war and the cost of living.

However, the men were in some cases not willing to return to work. At Fernie, B. C., the Crows Nest Pass Coal Co.'s mine workers refused to go to work on Wednesday, Apr. 18, though notified by the company to do so. They were waiting, they said, for the signing of the agreement.

T. W. Crothers, the Minister of Labor, reviewing the situation in the Dominion House of Commons, declared that the Lemieux Act had been unsuccessful in connection with coal-mine difficulties. He might have added that the reason why it was unsuccessful was because he had never enforced it. He was quite hopeful of an agreement however. He said that the Dominion Government had paid the miners \$92,000 to date for the extra wages that they had been awarded as a result of a strike to adjust the change in the cost of living.

## Anthracite Mine Workers Get Advance

As has been long anticipated, the 170,000 anthracite mine workers have made a request for an increase in wages. Owing to their steady work, they have been more prosperous than the bituminous miners, though the increased cost of living has decreased the purchasing power of their earnings.

After the Central Competitive Conference concluded its sessions, John P. White, the international president of the United Mine Workers, asked for a conference with the anthracite operators through Samuel D. Warriner, president of the Lehigh Coal and Navigation Co. and chairman of the Operators' General Conference Committee, which last April negotiated the four-year working agreement.



### Operators Grant Conference as Soon as Asked

The operators immediately granted the request, and a meeting of the representatives of the mine workers and operators was held on the seventh floor of 143 Liberty St., New York City, on Saturday, Apr. 21.

The operators present were Samuel D. Warriner; W. J. Richards, president of the Philadelphia & Reading Coal and Iron Co.; Morris Williams, president of the Susquehanna Coal Co., and W. L. Connell, president of the Connell Anthracite Mining Co., an independent producer.

The miners were John P. White, John T. Dempsey, of Scranton, president of district No. 1; Thomas Kennedy, of Hazleton, president of district No. 7, and James Matthews, of Shenandoah, president of district No. 9.

Mr. White, whose argument closely resembled that made before the bituminous operators of the Central Competitive District on Apr. 14, presented the request of the mine workers for an increase in wages, claiming that with the present cost of living the miners are not able to provide properly for the needs of their families. He said that the miners had been reluctant to ask for higher wages and declared that they had steadfastly observed their contracts.

At the conclusion of the session, at which there was much discussion, the following statement was given out by James Gorman, secretary of the Conference Committee:

The committee met in informal session to consider a request upon behalf of the anthracite mine workers for a voluntary increase in wages to meet the present high cost of living. No other matter was before the conference, as the present contract in the anthracite region has still three years to run.

The committee met again at 2 p.m. on Monday, Apr. 23. Meanwhile the miners' representatives had several conferences, meeting both Saturday night and Sunday to consider the situation.

### Mine Workers Ask and Get Increase of 20 Per Cent.

At the sessions held on Monday afternoon the representatives of the miners made a formal demand for an increase in wages of 20 per cent. No definite action was taken by the operators, and the conference adjourned to meet again Tuesday afternoon, Apr. 24. The definite proposal of the miners was as follows:

New York, Apr. 23, 1917.

To the Representatives of the Anthracite Operators,  
Gentlemen:—Since adjournment on Saturday afternoon the representatives of the anthracite mine workers have carefully canvassed the situation that confronts this conference with reference to an increase in wages. We recognize most fully the extraordinary conditions prevailing at this time and have given the subject matter of a wage increase our most mature thought. We believe that the anthracite operators should grant an increase that will be substantial and commensurate with the labor situation and that will to some degree enable our people to more adequately meet the ever-increasing cost of living.

It is our candid opinion that said increase should be 20 per cent., apportioned in such a manner and way as to be helpful and constructive. We stand ready and willing to join with you in working out a settlement on this basis. We hope our suggestion will receive favorable consideration.

The foregoing was signed by John T. Dempsey, Thomas Kennedy, James Matthews and John P. White in the order named.

After conferences continuing until late Wednesday night, an agreement was reached by which the mine workers were granted increases ranging from 11 to 35 per cent. The new agreement remains in force until Apr. 1 of next year when another agreement is to be negotiated.

### Full Text of the Amending Anthracite Contract

The contract reads as follows:

First—That, for the period May 1, 1917, to Mar. 31, 1918, the compensation paid employees in the Anthracite Field shall be increased as follows:

a. Contract machine and hand miners shall be paid an advance of 10 per cent. on their gross earnings.

b. Consideration miners shall be paid an advance of 10 per cent. on their earnings, based on the rates now in effect.

c. Contract miners' laborers, and consideration miners' laborers, shall be paid an advance of 10 per cent. on their earnings, based on the rates now in effect. Day machine miners' laborers receiving not less than \$2.72 a day shall be paid an advance of 10 per cent. on their earnings.

d. Company men now receiving \$1.54 or more per day shall be paid an advance of 36c. per day for each day worked.

e. All employees paid by the day and now receiving less than \$1.54 per day shall be paid an advance of 30c. per day for each day worked.

f. Monthly men coming under the agreement of May 5, 1916, shall be paid an advance of 36c. per day for each day worked.

g. The advances of 36c. per day and 30c. per day above provided are to be applied to a day, whether 8 hours or more, as established under the agreement of May 5, 1916; any proportionate part of a day to be paid a proportionate part of the advances herein provided.

Second—It is distinctly understood and agreed between the parties hereto that because of the situation that has arisen as a result of the war and the needs of the nation in the

matter of fuel supply, there shall be no unnecessary shut-downs; and that the employees will give that full cooperation necessary to maintain the production of the mines at their fullest capacity.

Third—It is further agreed that, except as hereinbefore provided, all of the covenants and conditions of the agreement of May 5, 1916, shall remain in full force and effect up to and including Mar. 31, 1920.

The statement given out by the miners' representatives concerning the new agreement reads as follows:

The increases granted are a permanent addition to the present wage rates (not a bonus), to remain in effect until Apr. 1, 1918, expiring on the same date as the bituminous contract, when all contract provisions including wage rates and conditions will be reopened or continued as the cost of living or industrial conditions warrant.

Monthly men of all classes and pumpmen are to receive an increase of 36c. per day.

The following classes of workmen are to receive an increase of 36c. per day: Engineers, all classes; firemen, all classes; carpenters and carpenters' helpers; blacksmiths and blacksmiths' helpers; teamsters and teamsters' patchers; timber yardmen and drivers; car runners; loaders; slate bankmen; car hitchers; spraggers and shedmen; dumpers; electricians; trackmen; oilers, all classes; chargemen, all classes; machinists and helpers; masons and helpers; watchmen; drillers; jackmen; stablemen; waterboys; shovelmen; company laborers; timbermen; roadmen; drivers; top and bottom men; car pushers, runners, couplers and helpers; door tenders; locomotive runners and helpers; stripping miners and stripping laborers.

Contract miners, contract miners' laborers and consideration miners are to receive a 10 per cent. advance on gross earnings, which is equivalent to 11 per cent., due to the increase being applied to the gross cost of mining supplies.

The following are to receive an increase of 30c. per day: Breakerboys and aged men; slate pickers; waterboys; jig runners and spiral workers.

The increase in the labor cost amounts approximately to 20 per cent., the advances ranging from 11 to 35 per cent. The intention of the scale is to raise the wage of the men receiving the lowest pay.

## Wage Conference in Philadelphia

The mine workers of the central Pennsylvania field, who have already received a bonus of 10 per cent., are desirous of making a new arrangement with the operators. They opened a conference with them on Aug. 17 at the Bellevue-Stratford Hotel, Philadelphia.

The mine workers want an increase of 33½ per cent., though the Central Competitive District gave only about 20 per cent. to their machine miners and about 13 per cent. to their pick miners. They want the abolition of car pushing, claiming a verbal promise of its abolishment, and they want the "check-off" collected without any charge for the clerical work involved.

The increase in wage rate is, of course, a severe discrimination against central Pennsylvania. The mine workers have no justification for asking it, but perhaps they will reduce their demands on discussion as John P. White reduced his request—namely, from 33½ to 20 per cent. Mr. White had more excuse for making his large initial request. None of the working scales had then been modified, and the Central Competitive scale, which he sought to rewrite, was to be the model for the country. Everybody realizes that the central Pennsylvania scale should follow the precedents set by the Central Competitive District Conference.

### Large Scale Subcommittee Had To Be Reduced

A subcommittee was selected to consider the demand. It consisted of B. M. Clark, of Punxsutawney, and Harry Boulton, of Clearfield, president and vice president respectively of the Coal Operators' Association of central Pennsylvania; C. B. Maxwell, of Morrisdale, general superintendent of the Morrisdale Coal Co.; James R. Casely, of Du Bois, president and general manager of the Buffalo & Susquehanna Coal and Coke Co.; H. D. Boucher, of Beaverdale, Beaver Run Coal Co.; W. R. Craig, of St. Marys, general superintendent, Shawmut Mining Co., and J. C. Cameron, of Pittsburgh.

The mine workers are represented by John Brophy, of Nanty-Glo, and Charles Neill, of Clearfield, district president and secretary respectively of the United Mine Workers of America in central Pennsylvania; Richard Gilbert, of Clearfield; William Welsh, of Nanty-Glo; F. G. Walte, of Du Bois; P. S. Swartzentruber, of South Fork, and James Mark, of Du Bois.

This subcommittee has proved too large and has committed the work to another subcommittee composed of Rembrandt Peale, B. M. Clark and C. B. Maxwell for the operators and John Brophy, Charles O'Neill and James Mark for the mine workers. This committee met on Monday and again on Tuesday, but no decision was reached. As might be expected, the difficulty seems to be in respect to the demands relating to mining conditions. Neither mine workers nor operators can for a moment propose a change other than will accord with the wage-scale increase which the operators in the Central Competitive region have conceded to their employees.

## Editorials

*This is no time to measure the depth of a man's patriotism solely by the line of red, white and blue talk he hands out. These are days of action, and any mine official who has failed to urge employees to plant gardens, and who is running his plant with anything less than military precision, is showing love of country in mighty empty fashion. Some of the first-line trenches in this war run directly through our coal mines.*

### The Trust Problem Again

With the West Virginia coal operators now getting a taste of the medicine that the anthracite producers have been so liberally partaking of for years, the coal industry is once more groping around for some solution to this aggravating question. A solution will probably be more easily arrived at by a study of precedents in other countries. Whatever else may be said of the Germans, it is universally accepted that they have been the leaders in this direction. A study of their development and method of procedure is therefore of interest at this time.

The German supreme court has defined the trust, or as they term it, the "cartel," as "a combination of members of a trade for the purpose of safeguarding the existence of the trade by protection against depreciation of its products and other disadvantages resulting from price-cutting by individuals." Perhaps the only difference between the two is a complete absorption and abolition of the individual concern in the case of the trust, while in the case of the cartel, these all maintain their individuality. Not only has the American trust been responsible for the almost complete disappearance of the individual unit, but it has gone farther and rendered other industries, such for instance as the railways, subservient to its purposes. Nor has it stopped here, it being generally conceded that it has at times exerted a powerful influence in our legislature. Germany has very carefully excluded the cartel from having any influence in politics whatever.

In spite of the more paternal form of government in Germany, public opinion was as bitterly opposed to the formation of these cartels when they were first created as is the case in this country. In fact, the Coal Syndicate was attacked so vigorously that an official inquiry was instituted in 1906, though the results indicated that generally a fair and reasonable policy had been pursued in the regulation of prices. As in the case of our alleged anthracite trust, it was found that the syndicate had prevented undue inflation of prices, which more than justified it in taking the rigid action it had to eliminate disastrous price-cutting during periods of depression. It is undoubtedly a fact that the Coal Syndicate has proved a very important economic factor by stabilizing fuel prices and preventing violent fluctuations such as we are now witnessing in this country. With consumers paying extraordinary prices for coal, now would be an opportune time to bring this matter up for serious consideration.

### The Unstable Anthracite Prices

Early in March we called attention to the great difficulties that were liable to follow the announcement of the customary spring discount by the leading anthracite companies and urged that this should not be done. There were some who took vigorous exception to our views of the situation, but even so it is far from gratifying to us to note that these views were more than justified.

When the usual 50c. reduction was announced by the leading anthracite shipping company many of the retail dealers, despite their better judgment, allowed themselves to be goaded by newspaper criticism into announcing the usual retail reduction of a similar amount. This was especially true in the Philadelphia territory, where, on account of a reduction in the freight rates coincident with the new spring circular, the dealers advertised a reduction of 75c. a ton.

A few weeks previous to Apr. 1 there was a sudden slackening of the demand for coal all over the country, yet before the orders could be cancelled the companies made especially heavy shipments to certain territories, at the winter circular, of course. At first the dealers were inclined to view this influx of coal as a misfortune, but since the first of the present month the demand for coal has been even heavier than the usual spring demand.

Production, on the other hand, has been so badly curtailed by eight idle days among the first fifteen, that little coal moved since, and practically the only coal the dealers had for sale was the high-priced product received in March. To make matters worse the other shippers, for the first time in many years (if ever), failed to follow the lead of the largest anthracite company in the matter of prices, although many did reduce the prepared sizes 50c. a ton. Pea coal, however, was held by some companies at \$2.50, by others at \$2.80 and still others at \$3, as compared with the \$2.30 price that was quoted by one company.

It did not take long to deplete the stocks on hand, and the dealers began to pay premiums on all sizes in excess of the winter circular. Some, however, still in the lingering hope that they would yet receive good shipments of the low price coal, followed the usual practice of accepting orders at the reduced April retail prices. Many of them figured that they could easily stand the usual 10c. per ton increase for May, though they seemed to overlook the statement of the mining companies that they did not know whether they would follow the usual plan of increasing the monthly circular 10c. a ton.

It looks now as if the custom might be abandoned, at least by quite a number of the shippers, and that a greatly increased scale of prices will be in effect for May on account of the increase in wages to the miners. We know of many large and small retail concerns that have thousands of tons of coal on their books at April prices and who will be at great expense to make delivery in May at any increase in excess of 10c. a ton.



## Requisitioning Coastwise Shipping

Press reports from Washington this week announced that a shipping committee had been appointed by the Council of National Defence, and that it was planned to take over immediately 1000 or more vessels mostly from the coastwise trade, for use in transporting supplies to Europe. The tentative list of those composing the committee, as received at this writing, discloses an imposing array of shipping men, including some of the foremost in the country. But among them there are no coal men.

In the meantime, the City of Boston has advertised three separate and distinct times for 100,000 tons of coal, and has received not a single bid. Following its last fruitless efforts, the mayor, in desperation, called a conference of the local coal men. He was told at this conference that no single dealer could be relied upon to take the entire contract, and furthermore, that the only way a supply could be assured at this time was to enter a contract at once at \$15 per ton. In 1914 the city paid for this same coal \$3.68 per ton.

In 1916 there were roughly 13 million tons of coal transported to New England by water. The railroad movement was also tuned up to the breaking point, and in spite of this there was a more or less persistent shortage of coal in that section throughout the year.

It seems hardly conceivable that the newly formed shipping committee of the Council of National Defence will countenance any interruption to the coal traffic to New England. This is one of the richest industrial sections of the country, and one which will be a very important factor in the preparation of this country for war. The withdrawal of these vessels for use in transatlantic service may, it is true, afford our allies some temporary relief, but will it not ultimately result in killing the goose that lays the golden egg?

## Racing with His Shadow

"Labor is everything." When we buy anything, it is labor we buy—the labor of the man that made it or grew it or dug it out of the ground, who fashioned it or thought it out, who planned it or developed it. It is not a material we buy but an exertion, an effort—so many hours of exertion, so many days of effort; not an automobile or a hoe but so many moments of the machinist's time, so many laborious bendings of the plate roller's body.

The workman receives money for labor and expends it again for other labor. The workman, therefore, hires other workmen, and he has an interest in seeing that they do a good day's labor; for then what he buys is labor that profits him and not unprofitable labor. The workman has an interest in seeing that other workmen whom he hires—and must hire—do their part as he does his. He has just as much interest as if he himself took the time to do the work that they do for him. He cannot gain by the slacking of other men who are making things for him—shoes for his feet, shirts for his back, clothes for his apparelling, food for his sustenance—for he is not desirous of paying for the hours spent on his product but on the product which the hours bring forth.

It is therefore to the workmen's interest that all men have the best and most economic tools for their work, that they have a chance to work steadily and not seasonally or otherwise irregularly, and so do not have to ask a big

wage to balance their periods of idleness; that, in short, they do their part every year, month, day and hour, be the measure of a full day's labor, as accepted by mankind, more or less.

Every man is taskmaster to his neighbor. There is little solidarity between different kinds of labor except in so far as labor works steadily to accomplish something, to meet the forces of nature and to compel them to submit. The man that wears shoes is not at one with the man who makes them; the shoemaker who buys coal has an opposite interest to the man who mines it, but they help one another if they both work industriously so that the coal miner is not stinted in shoe leather nor the shoemaker in his heat.

Now as the shoemaker is the hireling of the miner and the miner of the shoemaker, what profit is it if they both conspire to pay one another \$1 more a day? Neither has any more, though he may deceive himself into thinking so. The value of the dollar has merely been depreciated, and if the shoemaker has put aside a little store of dollars



HE RUNS A FUTILE RACE WHO CHASES HIS SHADOW

he is the poorer, because it will buy less fuel. So long as there are no more shoes and no more cars of coal to divide, how are these workmen bettered by the new wage they have secured? They would stand just where they were if they made the wage increase \$100 a day instead of \$1. Only the industrious man who had money put by would lose by the raised wage.

Of course, wages can be raised in one industry more than in another, and thus the men in one trade can steal a march on the men in another; but is it fair? The miner can make the shoemaker pay him more, and then if the shoemaker is not a keen bargainer, the shoemaker may go on working at the old rate. Just lately the conditions have been going against the miner. He has been falling behind the men in other trades who have been getting a greater increase in their pay envelopes. But the miner has the matter righted in the Central Competitive District, and he will soon have it righted in central Pennsylvania, the anthracite region and in other districts also.

We need to learn that there is nothing in mere cost of living. It is what labor produces which profits the workman. Given the maximum output, the maximum earning will result. Efficiency, economy, steady work and energy are the elements which will make a large product possible. Sobriety and thrift will make it feasible to put a large percentage of these products into the creation of instrumentalities by which efficiency, economy and physical energy may be assured. And then patient labor watered by the fertile rain of increased capital will provide a greater stock for division among the producers.

The man who tries to improve his condition by increased wages is racing with his shadow. The cost of living follows along as far as he moves. A "penny a day" would be enough for any man if the penny only bought enough; \$100 a day would not help him a bit if it bought no more.

We are glad there has been a wage adjustment in the coal regions, for that is the righting of an economic wrong; but we trust that nothing will be done to reduce real efficiency. We all claim we should have more wages—that is, more power to purchase things, more things, mind you, not more tokens of things. Then let us all knuckle down and get them or let us quit squealing when we find they can't be got without labor. Labor cannot be at once both everything and nothing—everything when we are paid for it and nothing when we buy it. Let us not swell up with admiration at the man who mines a ton of coal and overlook the energy and effort of the man who produces a wagon-load of wheat.

### Technical Graduates Only Need Apply

The Bureau of Mines is in need of a high-grade engineer. The man desired must have had wide practical experience and be possessed of a clean record. One stipulated qualification printed in the circular of the Civil Service Commission stands out prominently—graduation from a mining college of recognized standing. This is a qualification frequently insisted upon not only by various departments of the Government but by many private employers as well.

Far be it from *Coal Age* to deprecate or belittle the advantages of a technical education conscientiously acquired. To the average man a college course represents a considerable outlay of both time and money, and the knowledge and training gained should be a tangible asset. On the other hand, the mere fact that a man has successfully negotiated a certain prescribed course of study is by no means a sure criterion of his mental, practical or business abilities, proclivities, capacities or attainments.

It is our firm belief that a man who has had the proper training and experience, who has developed the proper character, stamina and habits of thinking via the "college of hard knocks," is at least equally as capable of meeting and solving the problems of mining or any other industry as the one who may boast a "sheepskin."

The following to completion of a certain course of study is an indication more or less true of a man's natural bent, also the direction and, to a certain extent, the magnitude of his ambition. A college degree can hardly, however, be considered as an indispensable adjunct or a sure guarantee of success, either in mining or any other profession.

We are reminded in this connection of the story that is told of a certain coal operator and his methods and reasons for employing men for his engineer corps. This man,

who had risen from the bottom to the top of the ladder, who had come up from driving mules to a seat behind the general manager's desk, who had grown old and experienced and wise and wealthy in the production of coal, was once asked what he thought of employing technical graduates as engineers about the mines. He replied that he never hired any man on his engineer corps who had not taken a degree from a technical school of recognized standing. When pressed for his reason for such an arbitrary rule he replied: "When I must build a trestle or a conveyor line, a power plant or a tippie, I get my technical men together, inform them what I want in the way of loads, capacities, etc., and tell them to get busy. Then after they have got all through figuring out bending moments, section moduluses, flexures, fiber stresses, shearing stresses, tensile stresses, bearing stresses, moments of inertia, radii of gyration, and all the rest of it, all I have to do is just take their final figures, double them, and add 25 per cent., and I know that the building will be about strong enough."

The above is doubtless somewhat overdrawn, but it nevertheless portrays in possibly a distorted manner some of the shortcomings to which the technical graduate is liable.

### Give the West Virginia Operators a Chance

The Government has just asked for bids on 1,250,000 tons of coal for the Navy Department. The requirements on this business are most rigid, and the contract is hedged in with many inflexible exactions. In spite of the urgent requests for coal from all directions, the Navy will brook no delay, and Government coal must be given the right-of-way over every other interest. This is as it should be at this crucial period, but at the same time the Government should give these operators a chance. For instance, a West Virginia producer writes us under date of Apr. 21, as follows:

The fact that practically all the executives and managers of the smokeless coal field have been indicted has, and is continuing to, bring about a great deal of confusion in their efforts to produce coal at a time when the country is in most need of it. We have not the time to prepare our cases and at the same time attend to the legitimate business of producing and transporting coal. We are in much the position of a great army in the field fighting for its life with every officer of any responsibility removed from the firing line.

For example, I have spent fully two weeks since Apr. 1 traveling back and forth between my home and New York while there were innumerable important matters in urgent need of my attention, and this has been the case with every operator connected with the Government attack.

This is not a time for bickering over small matters. True, the Navy Department will receive its fuel supply, irrespective of whatever else may happen, but it will be doing this at a sacrifice in some other direction which the country cannot afford at this time. If the Government feels that it has a strong case against the operators, the least it can do at this time is to continue it until some later date.

*Coal Age* is getting out a large poster suitable for use around mining plants. This poster is designed solely for company use and is to be signed by the mine superintendent, manager or president of the company before being tacked up. It calls attention to the duties of each employee in these wartimes and is printed in English, German and Hungarian. The supply is limited. If you want one, send us a postal today.



## Department of Human Interest

### He Didn't Stop To Think

It's jest a year ago today since Jones, poor chap, was took away.

(You know, ol' Jonesy was a careful gink.)

Jest why he started in to load before his props was set—he knowed

The roof was bad; but then he didn't stop to think.

Same way with Bill. You mind ol' Bill who used ter work at Prospect Hill,

In them days 'fore ol' Six went on the blink?

Well, Bill is gone. He stole a ride. A couplin' broke. Sure thing, he died

The morning after. All because he didn't stop to think.

You ask fer Joe? Well, he's gone too. Them first-aid guys knew what to do,

But you recall how Joe would have his drink?

He ran in blackdamp; laid him low. We got him out—his turn to go.

Boozy heart, the Doctor said. He also never stopped to think.

It's my turn next? That may be true. But one thing, friend, 'tween me an' you—

When in the grave, these bones of mine, they sink;

If some guy writes my epitaph, I'm here to say that then the laugh

Will be on me—if it is said: He didn't stop to think.

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### Wire-Gauze Splints

Is the wooden surgical splint of our fathers to go like other wooden utensils? It always seemed a somewhat ungainly, cumbrous piece of surgical mechanism. You can tell the first-aid boys when they come to town as readily by their conspicuous bundles of splints and stretchers as by their brand new overalls and the symbolic crosses on their brassards. And these splints are as likely to be septic as the stretchers, though, of course, like them they never come in contact with the wound so that their condition is not a primary source of apprehension.

But then again how ungainly is a wood splint on a broken limb to which in a way it never seems to belong. It doesn't fit; it proclaims itself the square peg in the round hole and keeps in place about as snugly. Hence it is that we now have the wire-gauze "splint," if such a contradiction in terms may be tolerated. For the gauze is never split off a log as splints used to be, and the expression is as objectionable almost as "metal timbering."

The new splint, an American invention, is finding extensive application in the surgical and first-aid work of the war, where it has been used ever since the war began, thus proving its adaptability to the severest of needs.

The splint is devised so as to have the maximum strength and rigidity, yet it is so constructed that it can be formed into any shape desired by pressure of the fingers. It is noticeable for its compactness. It can be rolled up like a roller bandage and then it takes up no more room than a 4-oz. bottle. It can be put away in the first-aid box and so need not be carried on the outside as separate impedimenta, as is necessary whenever the long wood splint is adopted for the stiffening of limbs.

The splint is made in two sizes, 4 x 30 in. and 5½ x 36 in. There are four meshes to the inch and every joint is solidly soldered. Two longitudinal strips of steel are woven into the mesh from end to end of the splint and each end is bound with a similar steel strip, or "flesh protector," designed to prevent it abrading anything with which it may come in contact. The steel used in the construction of this gauze is so tempered that it is rapidly and readily molded to fit the human body. When even a crude bandage is used to hold it in place the splint is so



ADJUSTING A SPLINT MADE OF WIRE GAUZE

fashioned that it offers complete protection and immobility to the part to which it is applied.

As it is galvanized into one piece after manufacture it can readily be kept sterile. If it needs reinforcement it can be doubled on itself. This can also be done to fit it to the length of limb to be accommodated. It is best in such cases to double the gauze over the site of fracture. As it can be cut easily with heavy scissors or bone forceps, openings can be made in it by a surgeon for wound irrigation, ventilation and inspection. The splint is made by the Wright Wire Co., of Worcester, Mass.

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The Lehigh Valley Coal Co.'s "Employees' Magazine" in its recent issue tells of plans for a library and reading room for the free use of employees which is to be located in the main office building at Wilkes-Barre. This issue also contains an interesting article by Superintendent Thomas Thomas, directing all assistant foremen to remain in places where the roof is bad until such places are made safe. In addition there is an account of the Primrose mine fire and rescue work.

## Discussion by Readers

### Wooden Mine Pumps

*Letter No. 1*—My attention was recently drawn to the inquiry in *Coal Age*, Apr. 14, p. 682, regarding the successful use of wooden mine pumps for handling acid mine waters that corrode metal pumps and render them useless in a short time. I wrote to the party making this inquiry, at once, stating that we have, for some time past, manufactured this type of pump, which is now in use in a number of mines and giving good satisfaction.

The pump is called the "Murray all-wood pump," and has no metal parts in contact with the water, so that there is nothing to corrode—rods, liners, valve stems or seats. The plungers are of special hard wood and chemically treated, which further hardens them and renders them impervious to the water. The pump is compact and so designed that all its parts are easily accessible.

Many of these pumps have been operating for several years, handling water that would destroy a metal pump in two or three weeks. A special high-pressure, double-acting, simplex, plunger pump of this type will handle 300 gal. of water per minute, under a head of 300 ft. I shall be glad to give any further information that may be desired in this regard.

R. W. MURRAY, Manager,  
The Murray Pump Manufacturing Co.  
New Lexington, Ohio.

[The pump described by our correspondent, here, we understand has been developed and improved from the original type of wooden pump referred to in our reply to this inquiry, in the issue of Apr. 14, p. 682, and we can endorse all that Mr. Murray has said in regard to its efficiency in handling acid mine waters.—Editor.]

### Ignition of Gas by Electric Lamps

*Letter No. 3*—The question of the relative security of electric mine lamps and safety lamps, as suggested by the inquiry of "Mine Foreman," *Coal Age*, Mar. 31, p. 574, is one that should invoke wide interest.

It appears that the tests of electric mine lamps made by the Federal Bureau of Mines when these lamps were first introduced in mining proved that they were not safe for general use at the working face, where they are so liable to be broken. It was shown in those early tests that the glowing filament of the lamp when exposed by the accidental breaking of the glass bulb would ignite the gas. As has been pointed out the tests showed clearly the need of a device that would break the current the instant the bulb was broken, and the later experiments of the bureau have resulted in the approval of electric lamps so equipped.

In considering the question of a lamp to be used by miners working in a mine generating gas, it must be remembered that there are competent and incompetent, careful and careless, experienced and inexperienced miners comprising the great body of mine workers. Under

these conditions, safety requires that a lamp for general use in a mine generating gas must be one that is least liable to cause trouble in the hands of an incompetent, careless or inexperienced person.

The conditions that determine the requirements of a good working lamp in a gaseous mine are too well known to need description. The law requires that the fireboss shall inspect all the working places in the mine, within 3 hours of the time when the men begin work. Following this inspection, a competent foreman, or one of his assistants, makes his regular rounds and examines the places while the men are at work.

An accumulation of gas is liable to occur after the fireboss has made his examination in the morning, or at any time during the working shift, because of a possible derangement of the air current by the setting open of a door or a fall of roof in the airway, or the blocking of air passages by loaded cars or other obstruction.

#### THE QUESTION OF RELATIVE SAFETY

The question may properly be asked, Is an incompetent, careless or inexperienced miner less exposed to danger from such a sudden accumulation of gas in his working place when he is equipped with a gauze safety lamp than when using an electric mine lamp? The electric lamp may be broken and the glowing filament set off the gas.

On the other hand, the gauze lamp may fill with flame and ignite the gas outside of the lamp; or it may smoke and the gauze become clogged with soot; or the lamp may be overturned or held in an inclined position, so that the flame strikes the gauze. In any of these cases, the gauze lamp is unsafe. The globe of the lamp is as liable to be broken as the bulb of an incandescent lamp.

This is not an argument against the gauze safety lamp, which is certainly the only lamp to be used by firebosses and mine officials, in making an examination of a mine, and it is generally regarded, perhaps, as the safer lamp to be used by competent men who understand its use, because it reveals the condition of the mine air and the possible presence of either explosive gas or blackdamp. But, for a lamp to be placed in the hands of incompetent men who are careless and inexperienced, the electric lamp, in my opinion, provides a greater degree of security than the gauze lamp.

A miner might work for a considerable time, with comparative safety, when gas had accumulated in his place to an extent that would have been very dangerous had he been provided with a common gauze safety lamp. Using an electric lamp, however, he would be quite safe so long as the lamp is not broken. The same cannot be said to be true of the gauze lamp, which is always unsafe in a body of gas, except in the hands of an experienced miner.

But, the electric lamp possesses advantages over the gauze lamp that recommend it for use at the working face, aside from those I have already mentioned. The miner can wear such a lamp on his cap and thus have



the benefit of the light on his work at all times. The light is more portable and far brighter than that of a safety lamp, which must be kept in a safe place hanging on a timber but, instead, is more frequently set where it is liable to fall or be struck by a blow from a pick. When at work loading coal, timbering or doing other work miners are prone to suspend the lamp from their belt, where it is liable to be broken. The question to be decided is, Which of these two kinds of lamps is the safest for general work in a mine?

W. H. NOONE.

Thomas, W. Va.

## Reopening a Flooded Mine

*Letter No. 3*—Referring to the inquiry on this subject, *Coal Age*, Mar. 24, p. 533, let me say that I would be inclined to use a large water cage for unwatering this mine and until I could install a good pumping plant operated by electricity, for permanent use in keeping the mine free from water. I believe this would prove the most economical and efficient system of handling the water.

An inflow of 200 gal. of water per minute into the mine would mean  $12 \times 60 \times 200 = 144,000$  gal. in 12 hours. By hoisting the water at night, there would be no interruption of hoisting coal in the day. It would be necessary, in this case, to provide a sump having a capacity of  $144,000 \div 7.5 = 19,200$  cu.ft. To secure this water storage I would, if possible, make use of four or five openings in the old workings and arrange these to drain into the main sump at the shaft bottom from which the water is pumped.

### THE FUTURE DEVELOPMENT OF THE MINE

In regard to the safest and most practicable method of working this seam of coal 3 ft. thick and lying at a depth of 1200 ft. below the surface, I would be inclined to try the regular longwall method of mining except for the sandstone roof and floor, which is not favorable to the brushing required on the roads. My experience is that a sandstone roof never shoots down square but is more or less V-shaped, being higher in the center and hanging low on each side, as shown in Fig. 1. When this occurs, it is difficult to square up the brushing so as to give the required headroom for mules and cars.

In my opinion, a modified longwall and pillar-and-stall method, shown in Fig. 2, would be best adapted to the conditions described. I would start the pillar-and-stall system from the face of the old longwall workings by extending the main roads, driving these of such a width as to avoid the payment of yardage and allow sufficient space for building the waste caused by brushing the roof over the roads. The sizes of the headings or stalls, and width of pillars, are indicated in the figure.

As far as practicable, I would employ mining machines, using the Sullivan shortwall machine, with a cutting rate adapted to the hardness of the coal, say from 7 to  $1\frac{1}{2}$  ft. deep. These machines allow the face to be timbered much closer than is possible in the use of breast machines. Also, the packs can be built within 6 ft. of the coal face, which will be a great advantage where much brushing must be done, as in this case.

I would handle the coal along the face by handpower, in preference to machinery, as this would not be difficult in the proposed system, in a level seam. I would use

light, steel rails and ties such as I described in connection with the working of 3-ft. pitching coal, *Coal Age*, Mar. 17, p. 488. Steel rails and ties would be cheaper than wooden tracks at the working face, and the coal would be easier to handle.

It would be difficult to estimate with any degree of accuracy what tonnage may be expected within six months after unwatering the mine, since it is impossible to know what time will be required to clean up the old roads in readiness to start the new work. I might assume that, with good luck, there would be, say 250 working places opened in that time; and, allowing that 6 tons of coal could be loaded a day from each place, this would give a tonnage of, say 1500 tons a day.

In Fig. 2 I have shown the general plan of starting a new longwall face by advancing the main roads from

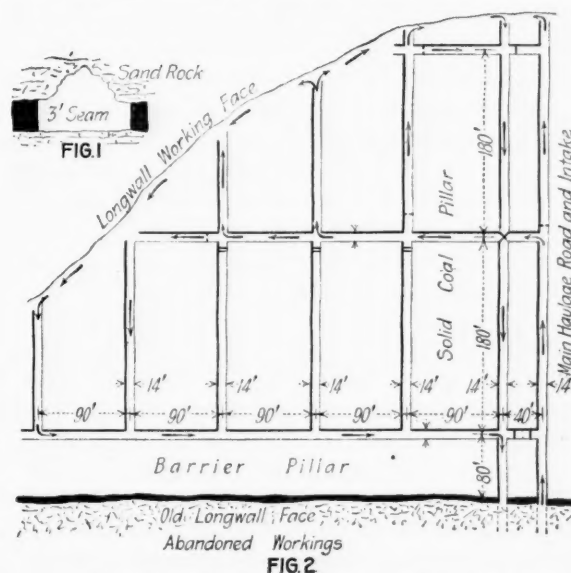


FIG. 2  
PROPOSED MODIFIED LONGWALL PLAN

the line of the old working face, and driving butt headings to the right and left of the main roads, although the figure shows the development on the left side of the main road only.

Butt headings are driven 60 yd. apart, center to center, and stalls or gateroads are maintained on 90-ft. centers. The brushing of the roof on the roads and gateways provides good material for building roadpacks. The work is all advancing, but the road pillars will be drawn back on the retreating system. Sidetracks or partings should be arranged at suitable places on the butt headings.

Linton, Ind.

W. H. LUXTON.

## Duties of Mine Examiners

*Letter No. 3*—It was with much interest that I read the letter of W. A. Barrett, *Coal Age*, Mar. 31, p. 571, relating to the duties of a mine examiner. I want to say that he is quite correct in his reasoning and deductions.

In my own experience of 42 years underground, I have filled every position connected with the mining of coal, from trapper boy to state mine inspector. Ten years of inspection service has afforded me large opportunity of observing men and their methods of conducting operations in mines. This was supplemented by a previous experience as mine examiner (fireboss) for a number of years. During all that period, I never once marked out a man because of a loose rock in his place. If other

dangers were present, or the mine manager (foreman) instructed me to hold a man and not permit him to proceed to work, this was done.

The Illinois mining law clearly and definitely specifies the duties of a mine examiner, but places the burden and responsibility on the miner himself, so far as looking after his own safety while at work in his place and guarding himself against loose roof or coal are concerned. The law requires that, at all times, the miner or loader shall timber his own place and make it safe. Sec. 23 (c) of the law reads as follows:

Every miner shall sound and thoroughly examine the roof of his working place before commencing work, and if he finds loose rock or other dangerous conditions, he shall not work in such dangerous place, except to make such dangerous conditions safe. It shall be the duty of the miner to properly prop and secure his place for his own safety with materials provided therefor.

If there is loose roof in a miner's place that needs to be timbered or taken down, it is clearly the miner's duty to do the work or suffer the consequences. If coal companies were required to send men to timber or take down all loose rock and slate in the working places, it would impose a heavy burden on the company, and the work could not be performed properly without great loss of time to the men and consequent reduction of output.

In my opinion, common sense should be used by everyone connected with the coal industry. The exercise of good judgment will greatly reduce the number of mine accidents due to falls of roof and coal. I believe it is a sound principle to make the miner responsible for his own safety while working in his place, since he is present there all the time and should know better than anyone else when the place is dangerous. However, men are only human and prone to disregard danger and take chances and, in this respect, they must be watched and trained by a thorough and constant inspection of their places.

ELVIS WILLIAMS,

Equality, Ill.

County Mine Inspector.

## Powder Ignited by Spark

*Letter No. 1*—The question of whether it is possible to ignite a charge of powder by forcing it into a hole with a copper-tipped tamping bar is suggested by the accident recorded in *Coal Age*, Mar. 31, p. 545. The conclusion, in that case, was that the explosion was caused by a piece of sulphur that was knocked loose in the hole and produced the spark that ignited the powder.

This incident recalls one of a similar nature that occurred in a powder mill some time ago and resulted in the death of a man who attempted to knock a "clinker," or hardened mat of powder, off a steel wheel with a wooden mallet. The operations attending this accident were about as follows:

The prepared mixture of soda, charcoal and sulphur that was to form the powder was run under a heavy steel wheel about 7 ft. high and 30 in. on the face. There were two of these wheels mounted on a single shaft and caused to revolve around a central standard. The wheels weighed about 5 tons each and rested on a steel plate. Their purpose was to grind the mixture to a fine powder.

In the process, so-called "clinkers" frequently formed on the face of the wheel, and it was the custom to knock these off with a wooden mallet. At this stage of the game the mixture is kept in a damp condition, which assists the

formation of the clinkers on the face of the wheel. Following the wheel was a drag or plow that stirred the mixture after it had been mashed down by the wheels.

The explosion occurred when one of the men attempted to knock a clinker off the face of the wheel with a wooden mallet, which should have produced no spark. In explanation of the accident, the superintendent stated that there must have been a little gravel or mite of steel in the mixture that caused the spark when struck with the mallet, and ignited the powder.

SPARKS.

Nashville, Ill.

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## Working 3-Ft. Pitching Coal

*Letter No. 10*—Referring to the several letters written on this subject, I agree with most of what has been said in regard to the working of such coal. I have one or two suggestions to make, however, relating chiefly to the size of the cars to be used and the handling of the gas generated in the mine.

In my opinion, it would be an advantage to employ two kinds of cars in this seam. I would use a small car having a capacity of from  $\frac{3}{4}$  to 1 ton. These cars would be loaded in the breast and used to haul the coal to the sidetrack or parting on the main haulage road, where arrangements should be made to dump the coal into larger cars having a capacity of  $3\frac{1}{2}$  to 4 tons each, by which the coal would be hauled out of the mine.

It would appear from the article of Samuel Dean, Feb. 10, p. 260, that there is but this one seam of coal, 3 ft. in thickness. It is important that a sufficiently large territory should be secured and prospected, so that the quality and quantity of coal available would be ascertained before starting to sink a shaft. I will assume, therefore, that the property contains 1500 acres of coal of a good quality.

### LOCATION OF THE SHAFT IMPORTANT

Having decided the question regarding the quality and quantity of coal to be mined, I would sink a shaft large enough to accommodate the large cars having a capacity of, say  $3\frac{1}{2}$  tons. I would locate this shaft as near to the center of the lower boundary line of the property as surface conditions and shipping facilities will permit, and erect a power plant of ample capacity for all time, besides installing first-class hoisting, hauling and pumping equipment.

From the bottom of the shaft the main gangways should be driven nearly on the strike of the seam, allowing sufficient rise to give a good grade in favor of the loaded cars. Self-acting inclines should be used on the full pitch of the seam to reach other levels, and the rooms should be driven across the pitch so as to enable the small cars to be handled in the rooms with safety. On the gangway I would arrange spur-tracks to supply two or more rooms.

In mining the coal, I would use cutting machines that would undermine and cut the coal without necessitating the use of powder, which should be employed only for blasting rock. The coal should be worked to the boundary before drawing back the pillars.

With reference to the gas generated in the mine, I want to suggest that there is a large waste of gas in many mining districts that could be avoided, and the gas utilized for the production of power and for lighting. At the



present time, millions of cubic feet of gas are allowed to escape into the mine and become a menace to safety, whereas this gas could be used and made a valuable asset in the operation of a mine, if suitable plans were adopted that would enable its collection in large storage tanks.

A plan I have in mind that would seem practicable, where a coal seam is known to contain much gas, is to sink a 3-in. borehole from the surface to the coal. Cap the hole with a suitable pipe connection and install a compressor capable of exhausting the gas from the hole and discharging it into a large tank, from which it could be piped to the boiler house and burned under the boilers or used for the purpose of lighting.

It is hardly possible to estimate the quantity of gas that could thus be collected from a coal seam and predict its value in the economy of mining operations. By the same process, the mine workings would be relieved of much gas that is a menace in the working of such coal seams.

Nanticoke, Penn.

W. A. BARRETT.



## Use of Face Conveyors

*Letter No. 1*—The experience of Tim Goldon, in regard to the unsuccessful use of a face conveyor, as described in his letter, *Coal Age*, Mar. 10, p. 445, and his reference to a similar experience of Samuel Dean, prove the fact that face conveyors, like other mining equipment, must be installed under conditions favorable to their use or they will not work successfully.

The difference in the operation of various kinds of equipment, in different fields, is to be explained by the fact that the idea probably originated in a place where the conditions were ideal and called for just such equipment. I realize that one must study carefully the conditions in a district before he attempts to transplant a system from a mine where it has worked successfully to a mine in another field. I recall an instance where the result of such an attempt was a horrible failure.

### CONVEYOR PRACTICE IN EUROPEAN MINES

The conditions in coal seams on the Continent vary widely, and yet these seams are successfully worked by employing conveyors of different types. My information is that in one district alone there are some 40,000 ft. of conveyors in operation in the mines. Dividing this by 300 ft., the usual length of a conveyor face, will give an idea of the large number of conveyors in use. It is obvious that these machines are paying their way or they would not be utilized to that extent.

In one case, in my knowledge, there were eight conveyor faces, each 300 ft. in length, operated in a seam 2 ft. 6 in. thick and pitching about 10 deg. Mining machines were not used in cutting the coal, but the use of conveyors enabled the coal face to be advanced at nearly double the hand rate. The installation of the conveyors required straight-line faces and greatly improved the condition of the roof, which broke down well in the waste and provided good stone for the packwalls. The only trouble experienced was due to the carelessness of boys at the loading end, in not watching the slack coal, which would sometimes lift the chains. Occasionally, some enterprising individual would attempt to ride the conveyor and get some part of his clothing caught in the machine.

Men loaded the conveyor on contract, and frequently there was a sharp contest to secure a single face for the men in one family—fathers, sons, brothers and cousins. The company shifted the conveyor when necessary, provided the timber required at the roadhead and saw that there was an ample supply of cars to keep the conveyor running. This often caused the men in other sections of the mine to grumble, because their car-supply would run short, owing to the need of keeping the conveyors going.

Mr. Goldon mentions the difficulty of operating the conveyor where rolls occurred in the seam. I should not think that the Blackett conveyor could be worked successfully under such conditions, as it requires a straight, level face. Where rolls occur, an intermittent conveyor should be used, as it is much shorter and better adapted to any inequalities of the floor.

I remember one instance, however, where a Blackett conveyor was operated through a 2-ft. fault that cut its way diagonally across the face. This increased the expense, but the machine was run by brushing the roof and bridging up the conveyor on the rise side of the fault, so as to overcome the swag. It is the hollow, or swag, and not the hill that causes the trouble in those cases.

In the case cited by Mr. Goldon, where a conveyor was operated by compressed air at a distance of 3 miles from the foot of the shaft, I can readily imagine that there would be trouble. In my own experience the Blackett conveyors in use have been operated electrically and, as the mine was already equipped with that power, the installation of the conveyors required no change.

In closing, let me say that each case must be considered on its own merits. There are over ten different types of conveyors and, from this assortment, one must choose the machine that is best adapted to meet his conditions. While one conveyor requires a single road, another is designed to work two faces with one road. One conveyor is useless on pitching seams, while another is best operated on an inclination. One cannot be used on a rolling floor, while another is adapted to such conditions. Some conveyors are more easily operated by a compressed-air drive, while others are best suited to electrical power.

Montreal, Can.

J. F. K. BROWN.



## Bruceton Test of Clearfield Dust

*Letter No. 5*—I have not read the letter of John Verner that started the discussion of the tests made of the Clearfield dust, by the Bureau of Mines, but it appears from the several letters written that Mr. Verner stated that the test was made under conditions specially favorable for the production of an explosion; and, since these conditions did not represent those prevailing in the Clearfield mines, that the tests were of "no practical value to the coal-mining industry."

In my opinion, the sole purpose of the Bureau of Mines has been, first, to demonstrate the fact that coal dust is explosive under conditions that may arise in the mine, and second, to ascertain what means can be employed to prevent an explosion of coal dust. The explosiveness of coal dust has been amply verified by experiments, both at home and abroad, which seem to have demonstrated that the dust must be in a finely divided condition and dry.

The really dangerous element, however, in all coal dust is the volatile matter that it contains and which is distilled at a high temperature. This element is inherent in most coals and is the factor that renders the dust of bituminous coal more susceptible to explosion than that of anthracite.

Referring to the Clearfield mines, while the conditions prevailing there may be such as to render a dust explosion practically impossible, it should be remembered that these conditions may change at any time, and the value of the Bruceton test lies in the fact that it has demonstrated the explosiveness of Clearfield dust under favorable conditions. This fact being known, there remains no excuse if the results of the test are disregarded by mine operators in that region.

There is an old saying, "Familiarity breeds contempt," and it is equally true that the absence of explosion in the Clearfield district tends to make operators careless in respect to safeguarding their mines. The fact that the natural conditions existing in a mine or district are not favorable to the explosion of the dust does not prove that the danger has been removed, and I have yet to see the mine where that is true.

#### FALSE CONCLUSIONS IN REGARD TO DUST DANGER

The explosiveness of coal dust has been so thoroughly investigated and a knowledge of the results so widely disseminated, that mining men are prone to place too much reliance on the so-called preventives suggested, and regard a mine as exempt from explosion when the fact remains that a catastrophe is liable to occur at any time following a change in the conditions existing in a mine.

It is argued by some that coal dust is not in itself a dangerous factor in starting an explosion in a mine, but that the greatest danger lies in its ability to propagate an explosion when once started by some extraneous cause, such as a blownout shot or a local explosion of gas. The natural conclusion is that, in the absence of such extraneous cause, there would result no explosion by reason of the presence of the dust in the mine.

The Bruceton tests have, in my opinion, proved that this theory is false and established the fact that danger exists in the presence of the dust itself. I believe it would be a great benefit if the dust from all mines could be tested in a similar manner, especially where operators in a district are inclined to believe that their mines are immune from explosion.

I. C. PARFITT.

Johnstown, Penn.



### Reducing Ventilation at Firing Time

*Letter No. 1*—Some time ago there was considerable discussion in regard to the practice of reducing the circulation of air at the time of firing shots in mines. With others, I was impressed with the idea that a misunderstanding existed as to the several effects of such action. This impression has been deepened, recently, by the reading, in *Coal Age*, Mar. 31, p. 549, of a paper prepared by William E. Holland, state mine inspector in Iowa, and read before the Mine Inspectors' Institute at its annual meeting, June 15, 1916.

While it may be admitted that there is some truth in the claim that the danger of explosion may be decreased in certain cases where a strong air current carries with it and distributes throughout the mine a great quantity

of dust, it must be remembered that this advantage would be offset or completely overbalanced when the decrease in air volume would mean an increase in the percentage of gas, whereby the explosive condition of the mine air would, perhaps, approach the danger point.

The claim is made that to reduce the air volume means a reduction of oxygen in the mine and a lessening of the liability to explosive combustion. After referring to an accident in blasting, which is not shown to result from a strong air current, Mr. Holland remarks, "To my mind, this and similar accidents are sufficient proof that too much oxygen in the mine air at the time of firing is dangerous."

That a decrease in the air volume in a mine will mean a decrease in the amount of oxygen in the air can only be true in mines where the ventilation is so poor that a depletion of the oxygen in the mine air has resulted, which could take place by the absorption of the oxygen by the coal or by the generation of gas in the mine. Assuming a well ventilated mine, however, the claim that the oxygen content of the air can be reduced by decreasing the air volume is untenable.

Good ventilation in the mine workings means a certain volume of air passing and containing a certain percentage of oxygen. Multiplying such volume by the percentage of oxygen it contains gives the volume of oxygen in the current, and this percentage cannot be decreased by supplying a less volume of air.

#### HOW CONFUSION ARISES IN MINING PARLANCE

Some confusion may arise by a careless use of language. For example, a mine foreman will ask his fireboss, "How much air is there in the third north, John?"—and John replies, "Twenty thousand feet." What he means is that the circulation in the third-north entries is 20,000 cu.ft. of air per minute. It is clear that the actual amount of air in that section of the mine will depend upon the size and length of the entries and the development of the workings, which may contain 20,000 cu.ft. or 20,000,000 cu.ft. What is of interest to the foreman is the volume of air passing or in circulation.

As I have suggested, there may be cases where a less velocity of air would be an advantage at the time of firing, but it seems to me that any arguments urged in favor of reducing the circulation at such time should be concerned wholly with the behavior of the dust and gases generated in the mine. Notwithstanding all the experimental work that has been carried on in different countries to ascertain the conditions attending the explosion of coal dust, little has been done to prevent its suspension in the mine air. If the dust can be kept out of the air it will not explode, and this appeals to me as the one argument in favor of reducing the circulation of air when firing, because it will then have less power to carry dust in suspension.

Further study of these conditions may reveal the fact that the gases generated by the explosion of powder will depend much on the available oxygen present, and it must not be forgotten that a limited supply of air may result in the production of a larger quantity of carbon monoxide, which would add to the explosive condition of the mine air instead of decreasing it. Thus it will be seen that the condition of the mine air, with respect to the mixture of gases and dust, is the all-important factor.

—, Ill.

CRUX:



## Inquiries of General Interest

### Future of the Coal Trade

Kindly give me a brief forecast of what, in your opinion, will be the condition of the coal trade in this country during the coming fall and winter, 1917-1918. Do you look for an appreciable increase or decrease in the production and sale of coal?

OPERATOR.

—, Penn.

The best that we have to offer in reply to this inquiry as to the possible condition of the coal trade in the states during the coming year is reflected in the market department of *Coal Age*. From time to time we have supplemented these market reports by editorial comments.

Generally speaking, there are so many uncertainties in respect to the coal market for the next twelve months that no one can say with any assurance what the future has in store. As is well known, the demand for coal fluctuates with general business, being particularly dependent upon the industrial activities throughout the country. For this reason, therefore, a comprehensive view of the future can only be obtained by a close study of financial and business conditions.

It is true that students of economics, as well as financial authorities at the large business centers, almost universally hold the opinion that the outlook for a tremendous industrial activity has never been more brilliant than at the present time. However, in the unsettled condition of the world, today it is obvious and reasonable to believe that no one can tell what the next 24 hours may bring forth. We submit these two remarks as suggestive of the present outlook, and can only say that *Coal Age* will endeavor to keep in close touch with the situation as it develops from week to week and month to month, and give its readers the benefit of our investigations and conclusions.

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### Timbering a Parting Switch

Kindly allow me to submit the following question relating to the timbering of a switch for a sidetrack or parting. Its correct solution concerns me particularly at the present time, as we have experienced some difficulty heretofore in properly securing the roof at such places. In order to support the roof over the switch and allow the necessary clearance to a distance that will permit posts to be set between the tracks, it is necessary to use crossbars of sufficient size and strength to span 17 ft. in the clear.

The question I would like to ask is, Would it be advisable to use steel rails or I-beams, or squared oak timbers in such a case; and what size of steel beam would present the same strength, for this span, as a 6 x 8-in. white-oak timber? I have seen steel mine timbers largely advertised in *Coal Age* as being extensively used.

The question of using steel has come up recently and I have disputed the practicability of using steel rails

for such a length of span. I am inclined to believe that the steel may break suddenly and without warning, under heavy roof pressure, while timber will bend and give way gradually under a dangerous load.

Snow Shoe, Penn.

TIMBERMAN.

In replying to this question, it must be remembered that very much will depend on the nature of the roof over the place, in respect to what degree it is self-supporting. Interlocking slates and shales are, at times, self-supporting to a greater degree than other formations. The required strength of the crossbeam or collar must be determined in accordance with the height to which the roof may break when a fall takes place. This can only be decided by a knowledge of the formations and experience in the district.

In mining practice, the roof weight always arches over an opening, so that the actual weight resting on the timbers or crossbeams is only that of the loose material beneath this arch. Except in cases of squeeze or creep, the height of the arch formed above an opening will rarely exceed the width of the opening, and the strength of the supporting beams can be estimated on this basis. The beam, under these conditions, is not uniformly loaded as the loose material it supports approximates more or less closely the shape of a triangle whose apex is over the center of the beam.

Taking the unit weight ( $w$ ) of the material as 170 lb. per cu.ft., and calling the length of span  $l$ , expressed in feet, and the fiber stress of the material  $f$ , in pounds per square inch, the section modulus ( $S$ ) of the beam, or its moment of inertia divided by the distance from the neutral axis to the outermost fiber, is, in this case,

$$S = \frac{wl^3}{2f} = \frac{170 \times 17^3}{2 \times 16,000} = 26.1$$

Referring to the tables giving the properties of I-beams, in the catalogs of steel manufacturers, it is found that a 10-in. I-beam, weighing 30 lb. per ft., has a section modulus of 26.8 and is therefore the beam that should be used in this case. Where the clear span is 17 ft., these beams should be set 12 in., center to center. This distance can be increased as the span decreases, or a beam of less depth can be used.

A 6 x 8-in. oak beam, for the same span, would have about  $\frac{1}{11}$  of the strength of the 10-in. steel I-beam, since the strength of beams having equal span varies as the fiber stress and the section moduli of the beams. The section modulus of a 6 x 8-in. rectangular beam is 32, and the safe fiber stress of oak may be taken as 1200 lb. per sq.in., while that of steel is given as 16,000 lb. per sq.in. The relative strength of these beams, for the same span, is therefore,

$$\frac{16,000}{1200} \times \frac{26.8}{32} = 11 +$$

It would be unsafe to attempt to support a mine roof with a 6 x 8-in. oak beam, with a clear span of 17 ft.

## Examination Questions

### Miscellaneous Questions

(Answered by Request)

*Ques.*—A borehole from the surface is 8 in. in diameter and enters the rib fall in a mine. A mixture consisting of 45 per cent. of marsh gas ( $\text{CH}_4$ ) and 55 per cent. of air is passing up this hole with a velocity of 120 ft. per min.; what is the volume of flow in cubic feet per minute, and what would be its volume if sufficient air were added to bring the mixture to the highest explosive point?

*Ans.*—The sectional area of an 8-in. borehole is  $0.7854 \times 8^2 = 50.26$  sq.in., or 0.35 sq.ft., and the volume passing  $120 \times 0.35 = 42$  cu.ft. per min.

The quantity of gas in this volume of the mixture is  $0.45 \times 42 = 18.9$  cu.ft. per min. A mixture of pure marsh gas and air, at its most explosive point, contains 9.46 per cent. of gas; and the total volume of gas and air will then be  $18.9 \div 0.0946 =$  say 200 cu.ft. per min. The quantity of air to be added to produce this condition is therefore  $200 - 42 = 158$  cu.ft. per min.

*Ques.*—If powder smoke requires 2 min. 17 sec. to travel 100 yd., in an airway 6 x 8 ft. in section, what current of air is passing in the airway?

*Ans.*—The distance the air travels is  $100 \times 3 = 300$  ft.; the time,  $2 \times 60 + 17 = 137$  sec. The velocity of the air current is, therefore,  $300 \div 137 = 2.19$  ft. per sec., nearly, or  $2.19 \times 60 = 131.4$  ft. per min. The sectional area of the airway being  $6 \times 8 = 48$  sq.ft., the volume of air is  $131.4 \times 48 =$  say 6300 cu.ft. per min.

*Ques.*—What dangers are likely to occur from the use of mixed lights? Explain fully.

*Ans.*—A miner, with an open light on his head, is liable to enter a safety-lamp section, forgetful that he is carrying an open light; or this may happen through ignorance, carelessness, or a reckless disregard of rules and regulations. An increase of gas in the safety-lamp section, or a heavy fall of roof therein, may cause the gas to be driven out into other portions of the mine where open lights are used. Any derangement of the ventilating system may endanger the open-light sections.

*Ques.*—Would you favor using mixed lights in a mine that generates firedamp in some places?

*Ans.*—Mixed lights should not be used in a mine generating firedamp in dangerous quantity and requiring the use of safety lamps in certain sections. If safety lamps are required in one or more sections of a mine, the only safe method to pursue is to use safety lamps exclusively throughout the mine. Owing to the common dislike of miners to use safety lamps, however, many mines are operated with openlight sections while using safety lamps in other portions of the mine.

*Ques.*—Calculate the perimeter, rubbing surface and sectional area of an airway 5 ft. 6 in. high by 6 ft. 6 in. wide and 100 ft. long.

*Ans.*—The perimeter of this airway is  $2(5\frac{1}{2} + 6\frac{1}{2}) = 24$  ft. The rubbing surface is  $24 \times 1000 = 24,000$  sq.ft. The sectional area is  $5\frac{1}{2} \times 6\frac{1}{2} = 35\frac{3}{4}$  sq.ft.

*Ques.*—A mixture of marsh gas and air at its most explosive point is passing in an airway 4 x 5 ft. in section, at an average velocity of 500 ft. per min. What quantity of fresh air must be added to this current so that one will not be able to detect the gas on the safety lamp?

*Ans.*—The sectional area of this airway is  $4 \times 5 = 20$  sq.ft. and the volume of gas and air passing,  $20 \times 500 = 10,000$  cu.ft. per min. A mixture of marsh gas and air, at its most explosive point, contains 9.46 per cent. of gas. The volume of gas in this current is, therefore,  $10,000 \times 0.0946 = 946$  cu.ft.

The percentage of gas that will give no indication on the flame of a safety lamp will depend on the observer and the kind of lamp used. Most observers, using a Davy lamp, fail to detect 2 per cent. of gas. In order that the volume of gas present in this current shall not exceed 2 per cent., the total volume of air and gas passing must be  $946 \div 0.02 = 47,300$  cu.ft. The volume of fresh air to be added to produce this condition is, then,  $47,300 - 10,000 = 37,300$  cu.ft. per min.

*Ques.*—If a slope is pitching 45 deg. and is 2500 ft. long, what is the pressure per square inch on the pump when located 40 ft. from the face of the slope?

*Ans.*—The length of the discharge pipe, in this case, is  $2500 - 40 = 2460$  ft.; and, for an inclination of 45 deg., the discharge head is  $2460 \times \sin 45 \text{ deg.} = 2460 \times 0.707 = 1739\frac{1}{2}$  ft. The static pressure due to this head is  $1739 \times 0.434 = 754.7$  lb. per sq.in.

When the pump is in operation the working pressure is equal to the static pressure plus the pressure due to the friction of the flow of water through the pipe. The latter must be calculated for the quantity of water discharged ( $G$ ), in gallons per minute, and the diameter ( $d$ ) of the pipe, in inches, and length ( $l$ ) in feet, thus,

$$p = 0.434 \frac{lG^2}{800d^5}$$

For a discharge of, say 250 gal. per min., through a 4-in. pipe 2460 ft. long, on an inclination of 45 deg., the total working pressure is

$$p = 0.434 \times 2460(0.707 + \frac{250^2}{800 \times 4^5}) = 836 \text{ lb. per sq.in.}$$

*Ques.*—Assuming a mine that is being worked with open lights, describe five conditions that might be encountered which would necessitate the use of safety lamps.

*Ans.*—(1) In the development of a mine and the extension of the airways, the ventilating apparatus may prove inadequate to supply the air required for the dilution of the gases generated in the workings. (2) The increase of abandoned areas, affording greater opportunity for the accumulation of dangerous quantities of gas, may require the use of safety lamps. (3) Fresh gas feeders may be encountered as the workings are extended. (4) The workings may encounter faults in the strata and these furnish fresh supplies of gas. (5) The work of drawing back the pillars may so increase the quantity of gas as to require the use of safety lamps.



# Coal and Coke News

## Washington, D. C.

In an attempt to discover the reasons for the continued high prices of coal, the Federal Trade Commission held a series of hearings recently. The bituminous-coal operators made representations to the commission at that time. Within a few days this testimony will be supplemented by witnesses drawn from the large consumers of soft coal and the carriers of this commodity. Later the Commission will go to Chicago where operators, consumers and carriers in the Central and Western districts will be heard.

The bituminous-coal operators placed the chief responsibility for the high price of their product upon the lack of transportation facilities. Operators from fields in the South registered complaints against the scarcity of labor, due, they said, to the migration of negroes to Northern and Eastern industrial centers.

George W. Crawford, in charge of mining operations for a subsidiary of the United States Steel Corporation in Tennessee, told the Commission his concern was not opening new mining properties at this time because the profits were unattractive. E. L. Stone, a West Virginia operator, said that in addition to car shortages, the price of soft coal had been influenced by increased cost of supplies and labor and through the fact that consumers themselves had been bidding against each other for the output of the mines.

W. C. Adams, of the Alabama Fuel and Iron Co., asserted that operators in his district actually were selling contract coal now at a price below the cost of production which, he declared, had increased through car shortage, labor scarcity and increased cost of supplies. He complained that the Frisco Line running through his district, after refusing to meet an increase in price, was bringing coal for its own use from Illinois fields at still greater expense. This practice, the witness declared contributed largely to the shortage of coal cars available for general commercial uses.

J. V. Norman, attorney for the Harlan County (Kentucky) Coal Operators' Association, told the Commission the car shortage was due to inefficient operation of the railroads. He said the Illinois Central refused to purchase coal except at prices lower than the cost of production.

Representatives of other Kentucky and Tennessee fields said an ample car supply was the sole remedy for high prices.

### Conference on 15 per Cent. Advance

A conference upon the tentative order to permit the railroads of the country to file a 15 per cent. advance in freight rates was held by the Interstate Commerce Commission last week. This hearing developed the fact that there exists considerable opposition to the proposed advance among shippers, although in some instances it was acknowledged that the roads should be permitted to increase their revenues.

Clifford Thorne, representing the coal operators, opposed in toto the position of the railroads making the claim that they are confronted with a crisis of no more consequence than that of 1910, when they came to the Commission with a cry of "crisis" and "disaster," at which time, he said the Commission wisely decided that there was no crisis and that they were confronted with no disaster. The roads repeated the cry again in 1913, and again the Commission wisely decided that there was no need for an increase. Then, in 1914, at the commencement of the war, they came again and to a certain extent were successful.

Mr. Thorne called attention to the statement made by President Rea about what the increase in the cost of coal would mean to the Pennsylvania R.R., and he attempted to refute the statement by giving alleged facts as to the prices at which the C. & O., the L. & N. and other carriers have just made contracts for their coal, at prices which not only did not reflect an advance of \$1 per ton with which it had been said the railroads were confronted, but at prices little if any in advance of those previously in effect. He said it was impossible to believe that a railroad as powerful as the Pennsylvania would not be able to make contracts as low as the other roads to which he referred, and offered to back his statements up by reference to actual contracts if necessary.

In conclusion, Mr. Thorne stated that the shippers would have to absorb at least 2c. more per hundred pounds than at the present time, that the Commission should immediately proceed upon hearings to the shippers, and that not only the needs but the financial condition of the carriers should be gone into, that the Commission should reserve its opinion as to whether it is better to grant a 15 per cent. or any other percentage rather than a stipulated amount.

George D. S. Williams appeared in the interest

of the New York Consolidated Coal Corporation and other coal operators, and insisted upon the necessity for a thorough investigation.

Other shippers' representatives made similar statements and in a few instances the delegates declared themselves heartily in favor of the stand taken by the railroads. The Commission took the matter under advisement and it is anticipated that a decision will shortly be announced.

### HARRISBURG, PENN.

It looks as if the committee on mines and mining will not report favorably on the Scarlet mine cave bill, but instead will put through a measure introduced in the House on Apr. 17, by Representative Ramsey, chairman of the House mine committee. This new bill was prepared by the Scranton Board of Trade, and though specific and strict in its provisions lacks the drastic tone of the proposed law backed by the Scranton Protective Association.

The Ramsey bill calls for the appointment of a special mine inspector to supervise mining under public thoroughfares and public places. This inspector is to be recommended by the chief of the department of mines for appointment by the governor and his salary is to be the same as the present inspectors. His sole duties will be to inspect and prevent any mining which shall endanger the surface contrary to the provisions of other sections of the bill. Mining will not be stopped altogether, but in places where the removal of coal would be dangerous to surface safety, the operating company will be required to establish a reliable support, and the costs thereof are to be paid by the state.

When this bill reaches the floor of the House it will meet with considerable opposition due to the fact that the state may be compelled to pay hundreds of thousands of dollars for supporting the surface.

The committee on Mines and Mining has reported out with favorable recommendations the anthracite mine code as prepared by James E. Roderick, chief of the Department of Mines.

The Woodward amendments to the workmen's compensation acts were debated for several hours on Apr. 19, and the Labor and Industry Committee adjourned without taking any action, deciding to have further consultation about the effects of the measure at this time. It is likely that a further hearing may be held on certain points, but this is not determined.

The hearing was attended by labor leaders from all over the state and by many prominent manufacturers and coal operators.

Roger Devers was the leader for the labor people, while W. I. Schaeffer, H. W. Moore and Henry I. Wilson, represented the employers.

Probably the most important matter developed was that the State Compensation Board is not backing any bills except a few to make administrative changes. Chairman Harry A. Mackey said that the board had been endeavoring to administer the law fairly and had no suggestions regarding the proposed radical amendments as asked for by the labor people.

The labor people pleaded for the two-thirds compensation, the seven-day disability clause, the schedule of disfigurement and other changes as simple justice for toilers and dependents.

Dr. McAllister and other medical speakers urged that the doctors be given a square deal, as they are not paid for what they really do. They said that the proposed fee change would simply give the doctors the prevailing charges in the community.

William I. Schaeffer, who made the chief speech against the changes, held that war time was no time to make radical changes in the act, a viewpoint taken by Mr. Wilson, representing the bituminous operators.

Mr. Schaeffer referred to the successful operation of the act, the amicable agreements and the good feeling brought about between employers and employees and declared that the act was really untried and that the system should not be tampered with until times were normal and any suggested changes could be studied from all angles by experts. He made much of the point that no one knows what the act would mean in a few years and that if the amendments were adopted no one could tell the ultimate cost, which must be borne by the public.

It is predicted that the committee will report the bill out and that it will be passed, but that the amendments will be stricken out and practically nothing left in the bill but a few sections covering the administrative changes.

Another first-aid bill prepared by the Department of Mines has been offered in the House of Representatives by Mr. Powell, of Luzerne. Early in the session he introduced a measure, which afterwards was found to not fully meet the demands. This new bill calls for a rescue corps in every gaseous mine if 50 to 200 persons are

employed inside and to provide one additional rescue corps for every additional one person to 200 persons employed inside.

The superintendent of every mine employing less than 50 persons inside shall, upon the request of the mine inspector, provide a first-aid corps and a rescue corps.

The first-aid corps and rescue corps is to consist of five strong and intelligent persons recruited from officials and volunteers among the employees after a medical examination and are to be properly trained by those in charge.

Coal companies must furnish suitable stations and equipment for the first-aid men and sufficient helmets for the rescue members. This bill will affect both anthracite and bituminous regions.

A "pure coal" bill has been introduced in the House by Representative Schaeffer, of Schuylkill County. It sets a standard for anthracite coal of the varying sizes and provides that if any coal is delivered to a consumer which is under size or over size and which may contain more than the maximum of impurities as specified in the bill, the purchaser has the right to demand that it be replaced by coal of standard quantity and purity. If payment had already been made, the purchaser is given the right to bring legal action for recovery of his money.

The amount of impurity permitted in broken coal is 2 per cent. of slate and 3 per cent. of bone; in egg coal, 3 per cent. of slate and 4 per cent. of bone; in stove coal, 5 per cent. of slate and 4 per cent. of bone; in chestnut, 6 per cent. of slate and 6 per cent. of bone; in pea coal, 12 per cent. of slate and 12 per cent. of bone. The bill fixes the sizes of the coal, by standardizing the mesh through which the coal must pass. The purpose of the bill is, it is stated, to prevent any move by the coal-selling companies to combine several sizes, as was threatened last year.

Mr. Thomas Morgan, of Luzerne County, has introduced a bill which provides that no person engaged as a fan engineer or pump runner at or about any anthracite mine shall be engaged for a longer period than eight hours.

Mr. Morgan states that he did not include firebosses, driver bosses, etc., in his bill, as he expects that the bill will be amended in committee to cover these people, by members from other coal counties, and in this way stir up interest for his bill in the House by having other members in the House taking a hand in the bill. Mr. Morgan remarked that there is a general wave of dissatisfaction among the anthracite people from superintendents to driver bosses in being compelled to work more than eight hours, and it was at the request of these people he introduced the bill. It is also stated that many members from the bituminous region are interested in the bill and it may be amended to include the soft-coal officials. The bill is attracting considerable attention, in coming from a member of the House who is considered close to the present administration.

A bill introduced by Senator McNichol, which forbids the placing of compensation insurance with companies not organized under Pennsylvania laws, and which is considered of vital importance to the mine workers of the Commonwealth, has passed the Senate and now goes to the House.

Lloyd's, of London, with whom the insurance department had placed risks because of war hazards, was said by Senator Biddleman to be not only unauthorized to do business in Pennsylvania, but had no sanction under the laws of any state. He also stated that it was the duty of the state to carry insurance of the highest value for its coal mines, so as to guarantee beyond question the payment of compensation insurance to the coal workers.

Senator Biddleman led the fight for the miners two years ago to bring them under the compensation act.

### PENNSYLVANIA Anthracite

**Hazleton**—Miners at the local colliery of the Lehigh Valley Coal Co. have formed a co-operative society and will establish a community store for all members in order to reduce current living expenses. About 1200 men are participating in the plan.

**Mauch Chunk**—The Anthracite Drifted Coal Co., engaged in taking out drifted coal from the dams of the Lehigh Coal and Navigation Co., in the Lehigh Valley sections, is planning for early operations at the dams at Mauch Chunk and vicinity.

**Lansford**—The Lehigh Coal and Navigation Co. has effected an increased production of about 5000 tons of coal weekly at its mines in the Panther Creek Valley district, through the discontinuance of the regular Saturday half-holiday; overtime is being paid for this extra working period.

**Pottsville**—It was announced on Apr. 21 that the 1000 employees of the Philadelphia & Reading Coal and Iron Co.'s repair shops have received a 10 per cent. increase in wages. It is said the order applies to the other big shops in the region.

The amount of coal in storage here is said by the operators to be less than at any period since the last big strike. The great storage yards, where a million tons were stored last year, are now empty. As the result of a big increase in wages, operators predict that coal will be raised \$1 a ton to the public.

**Shenandoah**—All the collieries north of Broad Mountain were compelled to suspend on Apr. 21 for want of railroad cars, throwing thousands out of employment despite the unprecedented demand for coal.

#### Bituminous

**Ligonier**—George W. Deeds, of this place, and H. E. Marker, of Greensburg, have purchased the George S. Snyder tract of coal land in Saltlick Township. The tract is located at Champion, a short distance from the Indian Creek Valley railroad.

**Greensburg**—The Keystone Coal and Coke Co., owning several thousand acres of land in Westmoreland and other counties, recently announced that it would turn its vast acreage over to its employees for small farming purposes. It has now gone one step farther and offered ground for gardening to any person who would make use of it. It has plotted 40 lots of ground each 40 by 120 ft. on Electric Park Hill, near Greensburg, and several people from this city have applied for plots. It is understood that more land will be plotted off as needed.

**Chambersville**—The Eliza Smith & Brothers Coal Co. is now putting in an operation for developing the Peterman tract of coal near here. The drifts are opened, outside construction about completed and the railroad connections with the Buffalo, Rochester & Pittsburgh Ry. will be completed in a few weeks. Mrs. Eliza Smith will take an active part in the business end of the company, and her brother, Dr. Peterman, is general manager.

**Eleanora**—The installation of the largest electric pump in Central Pennsylvania has just been completed at Eleanora shaft. The new pump replaces several steam pumps and will care of the water from all the Eleanora mines.

**Connellsville**—The coal-stripping industry which has developed rapidly in Ohio has entered Westmoreland County. The West Penn. Coal Co. at Udell is now stripping coal and mining it with a steam shovel, with a present output of 250 tons per day. The superintendent in charge of the new operation is Arthur G. Page, of Mount Pleasant.

**Johnstown**—The Beachley Coal Co., with offices in this city, has sold its Beachley mine in Addison Township, Somerset County, to a syndicate of Virginia people. The deal includes the buildings, machinery and 300 acres of coal land. The consideration was not made public. The Beachley company will retain its mine at Portage and turn its entire attention to this plant with the view of getting a larger tonnage.

#### WEST VIRGINIA

**Charleston**—The monthly report of the Department of Mines shows 30 fatalities occurring throughout the state during the month of March. McDowell County led the list with eight fatalities, five being due to falls of slate, rock and roof, two to motors and one to electricity. Fayette County came second with seven fatalities of which three were caused by falls, three by motors and one by a mining machine. Raleigh County had four fatalities, Harrison three, Kanawha and Logan two each. Marshall, Mercer, Mingo and Monongalia each contributed one fatality. Of those killed 22 were Americans and eight were foreigners. Three fatalities occurred outside the mines.

**Clarksburg**—The opening of the Lake coal trade started with a rush and West Virginia operators will probably supply an immense tonnage of this coal for the Northwest from now on until the season closes. A large portion of the Lake shipments from the state will go from the Fairmont-Clarksburg district. The car allotment for this territory is now 1800 cars per day, and it is calculated that this field is in a position to send to the Lake trade 500 cars daily. Owing to the abnormally high prices during the past winter it is believed that the Northwest and other regions supplied from Lake shipments will not wish to take any chances on a rising market next fall and will stock up with all the coal that can be bought at this time.

**Beckley**—In cooperation with County Agent Frank M. Foote, many of the coal companies of Raleigh County are doing everything possible to encourage the planting of gardens by miners and their children. Unusual activity in this direction is being exerted at Glen White, Stotesburg, Winding Gulf and Tams. At Glen White a planting club of 15 to 20 boys has been organized. A tract of fine bottom land has been fenced off and an equal share allotted to each boy for cultivation. Seed and fertilizer are being furnished free. Similar methods are also in force to encourage gardening on the part of the adult population of the village.

**Affinity**—The club house of the Pemberton Coal and Coke Co. was recently destroyed by fire

entailing a loss of about \$4000. The origin of the blaze is unknown. Near-by property was also in danger during the fire, but the timely efforts of volunteer fire fighters prevented the spreading of the conflagration.

**Vanwood**—The Wood-Sullivan Coal Co. is building a tram road to handle the output of a new mine now being opened. The Pickshin Coal Co., also operating at Vanwood, began shipping coal recently.

**Bluefield**—Although still considerably short of the tonnage carried during the month of March last year, coal shipments over the Norfolk & Western during March of this year were much greater than those hauled during February and brought the total for the first quarter of 1917 up to 7,609,381 tons. During last month 2,597,055 tons of bituminous product were hauled over the Norfolk & Western. This tonnage is an increase of 382,885 tons over the preceding month and a decrease of 211,101 tons as compared with the tonnage carried during the month of January. During March, 1916, 2,717,507 tons were hauled over the road, while the shipments during the same month of 1915 totaled 1,904,752 tons.

#### ALABAMA

**Birmingham**—The coal operators are cooperating with their employees in their efforts to meet the high cost of living by providing and fencing free of cost large plots of ground on which those who desire may plant gardens and provide themselves with an ample supply of vegetables.

The buildings and equipment at the No. 9 Blocton mine of the Tennessee Coal, Iron and Railroad Co. are about ready for the beginning of operations, and work is progressing satisfactorily at the No. 10 opening in the same field. The Tennessee company is using the greatest tonnage of coal in its history and is practically out of the market except for taking care of contract obligations, and has been purchasing both steam and gas coal for its own use recently.

Alabama coal operators are again facing a most serious car shortage, the assertion being made by one of the largest producers that the situation is more acute than ever before in this district. During the past week mines throughout the district have lost from one to three days time for lack of equipment and a coal shortage has consequently resulted. Representatives of coal companies returning from tours of the southern territory report that the shortage of stocks is universal and that the railroads and industrial plants are operating on a hand-to-mouth basis. The scarcity of labor and the inefficiency and unreliability of the forces now employed in and around the mines is also proving a matter of grave concern to operators.

**Birmingham**—The Sloss-Sheffield Steel and Iron Co. has negotiated an agreement with the City Commission whereby the company is permitted to place in commission its 288 bee-hive coke ovens at the City Furnace plant for a period of three years or until such time as its proposed byproduct plant can be built and made ready for use, if sooner. These ovens were shut down by the city several years ago on account of the smoke nuisance, and permission is granted for use at this time on account of the company being in such dire straits for coke to maintain operations at its six blast furnaces, the city not wishing to hamper the maximum output of pig iron in the face of the present national crisis. These ovens will produce about 10,000 tons per month.

**Fairfield**—The Tennessee Coal, Iron and Railroad Co. is erecting a hospital at its byproduct plant here for the convenience of its employees in this division.

#### KENTUCKY

**Whitesburg**—Coal operators in the Elkhorn and Boone's Fork fields of Letcher County report continued improvement in the car situation with a freer movement of cars, all the cars being furnished operators that they need. Shipments are increasing rapidly from this field, and considerably more coal is going out at the present time than ever before. There is not an idle mine in the district.

**Frankfort**—The Kentucky Senate failed to pass the Crowe coal tax bill, passed by the House last week, placing a tax of 1c. a ton on all coal mined in Kentucky. This puts the bill definitely to sleep.

**Hazard**—Coal operators around Hazard have never experienced a more successful season. Orders are booked away ahead and at a good figure of profit; the car situation shows continued improvement, with mines operating full time. There is not an idle mine in the Perry County coal fields of which Hazard is the center.

**Fleming**—Three hundred miners were brought into the Fleming-Haymond-Hemphill fields recently, where they will be employed. They came largely from Georgia and Alabama.

#### OHIO

**Columbus**—Judging from the vote coming into the headquarters of the M-O-I Coal Association, it is altogether likely that no convention will be held during the present year. Some time ago the board of directors decided to leave the question

of the holding of the annual meeting to a referendum vote of the members and so far quite a few votes have been received. In most cases both the retailer and the wholesaler say they are too busy to attend and that the convention can be passed up for one year without any material damage to the organization.

#### INDIANA

**Terre Haute**—W. E. Eppert is heading a corporation which will sink shafts at Pimento, in the Terre Haute field. The corporation whose plans were made public today owns between 600 and 700 acres of land near Pimento and will begin work immediately on the shafts, and expects to take out the first coal during the early part of the fall.

A shotfirer was killed and a miner overcome with gas in an explosion recently occurring at the Sunbeam coal mine near West Terre Haute. From the indications following the explosion, it was evident that the accident resulted from a windy shot. A miner who attempted to enter the mine and recover the shotfirer's body was overcome by gas, and it was necessary for a party to form in order to rescue him.

**Clinton**—The Clinton Coal Co. is preparing to sink a shaft to the 5th vein on the Matthew's farm west of No. 3 mine. The new mine will be known as No. 7 and will replace the No. 2 mine, which will be worked out within the next year or so.

A car shortage is becoming apparent in the Clinton field and is showing its effect already. One of the J. K. Dering Coal Co.'s mines—Number 1—has been forced to shut down and has been idle for some time.

#### ILLINOIS

**Coulterville**—The Vulcan Coal and Mining Co.'s plant here, it is understood, has been sold to the West Virginia Coal Co. of St. Louis, provided the present owners are successful in the legal contest as to the ownership of the bonds now held by the Belleville Bank.

**Johnston City**—Work is now under way on the steel tipples here at the Lake Creek mine for changes that will permit this tonnage to be put on the commercial market. In the past this coal has been railroad fuel exclusively. The mine is controlled by the Consolidated Coal Co., of St. Louis.

**Marion**—Peabody Mine No. 3 is now idle for remodeling of the bottom, so as to handle the coal from the property of the former Cartersville district mine. When these changes are complete it will be the most up-to-date and will have the largest mine bottom of any mine in southern Illinois for handling coal from a great underground distance.

**Ziegler**—Joseph Leiter, of Chicago and Washington will return to Ziegler this summer and sink another mine. He has decided to throw open to the public the town of Ziegler, in which he has heretofore owned everything. He will lay out subdivisions and sell lots to all who want to buy. It is known that he has never given up his dream of coke ovens in this section and it is understood that as soon as his new mine is in operation he will go into the coking business on a large scale. Leiter was the first man to sink a mine in this county. He tried to operate non-union and there was trouble, which necessitated calling out the militia. After an explosion in the mine, which killed 57 men, the mine was leased to Bell & Zoller, of Chicago, who have since operated it.

**Harrisburg**—The first payday in April in the Harrisburg field was probably the largest pay on record in this mining field. The Saline County Coal Co. and the O'Gara Coal Co. paid out over \$300,000. The largest pay was at mine No. 9 of the O'Gara Coal Co., amounting to \$21,000. Not in five years has anything like this pay been on record.

**Desoto**—The old C & C mine, north of here, on the outcrop of the No. 6 bed which has recently been taken over by H. F. McDonald and others, of St. Louis, has now been leased to S. A. Wiessenborn & Son, of St. Louis, who are pumping it out and going to clean up several thousand tons of earth that went in when the main shaft caved. It is expected the property will be opened in the course of 3 months.

**Benton**—Coal deals involving several million dollars have taken place in Franklin County within the past week. The Purity Coal Co.'s mines at Christopher, known as Old North Mine and New North Mine, were sold to the Old Ben Mining Corporation, which operates two mines at West Frankfort. This gives the Old Ben people 16,600 acres of coal land in the county and a capacity of 16,000 tons daily. Deering mines Nos. 18 and 19, south of Benton, were sold to the By-Product Coal Corporation. This transaction involves 8000 acres of coal land and two mines with a capacity of a million tons a year. Coke ovens are to be put in near the mines. Marion D. Woods, of Des Moines, Ia., and Frank B. Halligan, of Omaha, Neb., bought 1400 acres in Six Mile Township. They will sink a new shaft and have it in operation by September, 1918. The Chicago, Wilmington & Franklin County Coal Co. took over the Rock Island tract adjoining.

**Nokomis**—Keller mine No. 10, north of town, is closed down for a week in order to repair



shaker screens and tippie equipment. Full running time for many months is assured upon resumption of operations.

## Personals

**Evan D. John** of Carbondale, Ill., was recently appointed Director of the Department of Mines and Minerals by Governor Frank O. Lowden of Illinois. Martin Bolt was appointed assistant director of the same department at the same time.

**Michael Hanahoe**, after a record of 51 years of continuous service with the Pennsylvania Coal Co., of Pittston, Penn., was recently placed on the retired list on a pension. He will receive \$20 per month as long as he lives. Mr. Hanahoe is 69 years of age.

**James W. Paul**, formerly chief of the Department of Mines of West Virginia, and later with the U. S. Bureau of Mines for several years, and for the past year a consulting mining engineer of Pittsburgh, Penn., has recently been appointed chief of coal mining investigations for the U. S. Bureau of Mines, with headquarters in Pittsburgh. Since his appointment he has been detailed to some important duties in connection with the work of the National Research Council, a sub-committee of the National Defense Board.

## Obituary

**William J. Fenner**, vice-president of the Hertzler & Henninger Machine Co., manufacturers of coal-mining machinery, Belleville, Ill., died Apr. 20 at his home in that city. He was 56 years old and was widely known among the coal men of Illinois and St. Louis.

**E. G. Lawrence**, sales manager of the Lumaghi Coal Co. and the Williamson County Coal Co., died recently at his home, 5073 Von Versen Ave., St. Louis. Death was caused by cancer of the stomach, from which he had long been a sufferer. He was compelled to give up his duties several weeks ago and was for a time under treatment at St. Anthony's Hospital. He was 48 years old.

## Industrial News

**Johnstown, Penn.**—The Dale Co. has been incorporated with a capital of \$300,000 for local operations. William W. Campbell is head.

**Colmar, Ky.**—The Long Ridge Coal Co., with \$500,000 capitalization, has been incorporated by F. E. Gilbert, C. O. Hoskins and J. D. Hoskins.

**Pineville, Ky.**—The Yellow Hill Coal Mining Co., with a capital of \$2000, has been incorporated by J. S., F. C. and W. C. Bingham.

**Connellsville, Penn.**—The Corrado-Schenck Coal Co. has been incorporated with a capital of \$11,000 for local operations. H. F. Schenck is treasurer.

**Philadelphia, Penn.**—The Emmons Coal Mining Co. has filed articles of incorporation with a capital of \$500,000. Grey Emmons is head of the company.

**Seranton, Penn.**—The Arkansas Anthracite Coal and Land Co., a Delaware corporation, has increased its capital from \$600,000 to \$1,100,000, for extensions.

**Bridgeville, Penn.**—The Midway Coal Co. has been incorporated with a capital of \$50,000 to operate in local districts. Fred B. Ollett is head of the company.

**Jeff, Ky. (Hamden Station)**—The Kenmont Coal Co. is making increases in its plant at Buckeye Creek, where mining was begun about 60 days ago. Other increases are promised during the summer months.

**Blanche, Ky.**—The Bailey Coal Co. has been organized by Custer R. Bailey, Chas. C. Bailey, J. W. Rollins and others with a capital of \$3000. It is said they plan the early beginning of a coal development.

**Hazard, Ky.**—The Tuttle Coal Co., of Cincinnati, has placed buyers in the Hazard field and will buy up a large percentage of the output of the mines hereabouts. Offices will be maintained in the Eversole Building.

**Uniontown, Penn.**—The H. C. Frick Coke Co. has purchased a tract of about 4½ acres of coking coal lands in German Township for a consideration of about \$9000, and plans for early operation on the properties.

**Columbus, Ohio**—The Packy Coal Co. has been incorporated with a capital of \$200,000 to mine and sell coal. The incorporators are: W. B. Lawton, C. E. Specht, Beman Thomas, C. J. Randall and M. V. Kessler.

**Philadelphia, Penn.**—The Chadwick Coal and Coke Co., Land Title Building, has been or-

ganized by Floyd F. Chadwick, formerly eastern manager of the Davis Colliery Co., now operated by the West Virginia Coal Co.

**Cleveland, Ohio**—The River View Coal Co. has been incorporated with a capital of \$120,000 to mine and sell coal. The incorporators are: E. M. Kossin, M. B. Pennell, Edgar R. Bayes, Augustus W. Bell and Sam Puleo.

**Nelsonville, Ohio**—The Powell Creek Coal Co. has been incorporated with a capital of \$10,000 to mine and sell coal. The incorporators are: William S. Morgan, D. W. Gibson, Fannie Gibson, E. L. Preston and C. L. Preston.

**Uniontown, Penn.**—The Consolidated Coke Co. has purchased 80 acres of coal land in Nicholson Township from R. M. Fry for a consideration of about \$80,000. The new owners are planning early operations on the property.

**Cleveland, Ohio**—The Brilliant Coal Mining Co. has been incorporated with a capital of \$25,000 to mine and sell coal. The incorporators are: Samuel O'Neill, John S. O'Neill, C. B. O'Neill, Chas. A. Vail and Sarah M. Hare.

**Cincinnati, Ohio**—The Jackson Red Star Mining Co. has been incorporated with a capital of \$20,000 to mine and sell coal. The incorporators are: George W. Rapp, Ford A. Basson, William C. Lang, Caroline Rapp and Frank Belle.

**Toledo, Ohio**—The Cambria Collieries Co. has been incorporated with a capital of \$5,000,000 to operate a colliery. The incorporators are: Newton A. Tracy, Norman W. Reed, Thos. W. Hughes, Fred G. Zinc and Chas. Weirich.

**Columbus, Ohio**—The Kimberly Coal and Land Co. has been incorporated with a capital of \$75,000 to mine and sell coal. The incorporators are: D. L. Wallace, S. Cottingham, Fred Essex, Mrs. S. Cottingham, and J. A. Stelter.

**Dover, Del.**—The Columbian Coal and Clay Co. has been incorporated with a capital of \$200,000 to engage in coal mining operations. Herbert E. Latta, Norman P. Coffin, Wilmington, Del., and Clement M. Egner, Elkton, Md., are the incorporators.

**Pittsburgh, Penn.**—Randolph-Means Co., of Pittsburgh, has been retained on the electrification work for the new mine to be opened by the Knox-dale Coal and Coke Co., at Brookville, Penn. This mine will be fitted with modern and up-to-date equipment.

**Dover, Del.**—The Electric Coal Mining and Machinery Co., Chicago, has been incorporated with a capital of \$150,000, to manufacture coal-mining machinery. Seward N. Mighell, Arthur A. Bettridge and Ralph E. Battan, Chicago, are the incorporators.

**St. Clairsville, Ohio**—The McGrew Coal and Clay Co. has been incorporated with a capital of \$10,000 to mine and sell coal. The incorporators are: John H. McGrew, Wilber W. McGrew, Walter E. McGrew, Elmer O. McGrew and John C. Nichols.

**Lexington, Ky.**—The Hombre Coal Co., with capital of \$35,000, has been organized by M. G. Yingling, of Lexington; E. L. Mitchell, of Mortonsville; J. A. Myers, of Pinckard; G. A. and D. J. Howard, of Versailles, and P. T. Wheeler, of Hazard.

**Somerset, Penn.**—Work on the new trolley line from Rockwood to Johnstown will be rushed this summer and it is expected to be completed by fall. The new line will pass through the Somerset mining fields and will strike Jenner, Boswell, Hooversville and other Somerset County mining towns.

**Frankfort, Ky.**—The lower house of the Kentucky Legislature has passed a measure which would exempt the tangible property of newly constructed railroads from local taxation for a period of five years. This is a measure designed to encourage railroad building in eastern Kentucky.

**Tulsa, Okla.**—The Okeee Coal Mining Co. has been organized here for the purpose of developing a large area of coal land in this county. The company has a capital of \$10,000 and the incorporators are: J. F. Schaeffer of Kansas City, Mo., C. E. Lehman and C. C. Roberts of Tulsa.

**Toluca, Ill.**—The Jackson Walker Coal and Mining Co. is about to make extensive improvements at its Toluca, Ill., property, involving a steel tippie, installation of mining machines, and reconstruction of the power plant. The company will also install mining machines at its Marceline, Mo., mines.

**Clarksburg, W. Va.**—The West Virginia Coal and Coke Co., that took over the properties of the Davis Colliery Co., is planning extensive improvements to be made at its plants this summer. Contracts have been let for new tipples and a large number of miners' houses in order to increase the tonnage.

**Pineville, Ky.**—The Straight Creek Fuel Co., a recent incorporation will make a coal development on the new Seagraves Creek branch of the Kentucky & Virginia R.R.—a branch of the L. & N. now being constructed from Kilday to Seagraves Creek. It is said the work will be undertaken at once.

**Hamden, Ky.**—(Jeff P. O.)—The Hamden Coal and Lumber Co., has been organized by George E. Ames, Z. F. Davis, S. J. Snyder and others with \$30,000 capital to develop the Hall coal and timber land tract. Initial work is to begin May 1. The owners plan a capacity of from 500 to 600 tons of coal daily.

**Cumbola, Penn.**—The Philadelphia & Reading Coal and Iron Co. is arranging to build at once a model mining village here. The village will consist of 48 double houses and will have the latest sanitary conveniences and appliances. The company has announced that it hopes to have the houses ready by autumn.

**Wheeler, Ky.**—The Richfield Coal Co. has just been organized here by R. H. Richards, R. E. Field, C. H. Richards and others with a capital of \$75,000. The new company will start a development in the Knox County field on the main line of the Louisville & Nashville R.R. A 1000-ton development will be made.

**Sullivan, Ind.**—B. O. Rock, superintendent of the Kraelbil Co., an engineering and contracting concern of Chicago, is in the Sullivan coal field preparing to start the construction of steel tipples and buildings at mines Nos. 12 and 17 of the Vandalla Coal Co. When completed these tipples will be the highest in the State of Indiana.

**Foustwell, Penn.**—The Grazier Coal Mining Co. is contemplating extensive improvements. It is said from 50 to 100 houses will be erected during the coming summer. A store building and several other structures are also planned. The coal plant is working to its full capacity and it is said that an additional mine may be opened next fall.

**Harold, Ky.**—The Layne Coal Co. has just been organized here by H. H. Layne, Dallas Layne and R. C. Layne who will put in a coal development on the Chesapeake & Ohio main line, the initial work to be started at once. H. H. Layne will be superintendent and manager. They will develop a plant of 500 tons daily, it is said.

**Buffalo, N. Y.**—The Corson By-Product Coal Corporation of this city, which is opening a new mine at Elkhorn City, Ky., expects to be shipping coal inside of 90 days. It has contracted with the A. Leschen & Sons Rope Co., of St. Louis, for its wire rope tramway equipment, to be used in carrying the coal from the mine across the river at that point.

**Coeburn, Va.**—The Kilgore Coal Co., a recent incorporation here, has purchased the Kilgore properties and will put in a development this spring and summer near Coeburn on the main line of the Norfolk & Western R.R. The initial work will be started May 1, according to the information given out. G. W. Kilgore will be manager of the new operation.

**Sydney, N. S.**—In order to encourage an increase of coal production in Nova Scotia by improving transportation facilities, the Canadian Department of Railways and Canals, has purchased two steamers, the "Drummond" and the "McKee," both of substantial carrying capacity, which will be used in the coal-carrying trade between Sydney, N. S., and Montreal.

**Whitesburg, Ky.**—It is said that arrangements are practically complete for the Louisville & Nashville to construct a short line branch up Thornton Creek to tap the rich holdings of the Mineral Fuel Co., a Philadelphia corporation, the property to be opened for development during the year. This is one of the most valuable undeveloped coal fields in Letcher County.

**Washington, Penn.**—Coal underlying two farms in South Strabane Township was recently purchased by the Pittsburgh Coal Co. The farms are those of Carson Berry, consisting of 41 acres, and the Abbie T. Berry heirs, consisting of 112 acres. The price paid was \$330 per acre. This sale is generally accepted as indicating that the Chartiers Southern R.R. will be completed this summer.

**Whitesburg, Ky.**—The latest addition to the development forces on Beaver Creek, a new field north of this city, now being rapidly developed, is The Duncan-Elkhorn Coal Co. just organized by John M. Duncan, E. R. Price, George Kebe, and George B. Martin. As announced this firm will develop the Martin coal land tract, the preliminary work to be started the latter part of April.

**Stanford, Ky.**—The Boreing Land and Mining Co. has just closed a deal by which it transfers to A. H. Woods of Kildor, Ky., 1762 acres of mineral land in Harlan County, Ky., for \$70,500. The property lies on Cummins Creek and Martin's Fork, about two miles from the Black Mountain & Washtoto R.R. It is said that this land will be transferred to a corporation which will develop it.

**Youngstown, Ohio**—The new byproduct coke plant of the Briar Hill Steel Co. is now in operation. Working on a 16-hour coking basis the new plant has a capacity of 850 tons of coke per day. The coal for coking is being brought from the Briar Hill Coke Co.'s mines in Fayette County, Penn. The Briar Hill company has also announced that it will build a new \$250,000 office building here.

**Steubenville, Ohio.**—The Beluan Coal Co., recently formed by a syndicate headed by B. A. McFadden, of Wheeling, W. Va., has purchased 1000 acres of land in Warren Township for \$200,000. Electric shovels will be installed to mine the coal at once. Mr. McFadden states that the operations will be conducted on an extensive scale and that the concern will be shipping coal within 30 days.

**Cornettsville, Ky.**—The Pratt Coal Co. recently organized here by J. C. Pratt and others is starting the preliminary work on a new coal plant immediately below Cornettsville on the main line of the Louisville & Nashville R.R. At first two mines will be opened and 50 miners' houses constructed. A plant with a capacity of from 400 to 500 tons daily will be developed. J. C. Pratt is manager.

**Uniontown, Penn.**—The W. J. Rainey Coke Co. has started a unique plan for the betterment of mining conditions at its towns. One of the houses at the Paul mines has been remodeled and a Welfare Club organized among the employees. This has a large portion of the building as a club house. The other part is used as an emergency hospital. The welfare work is in charge of Superintendent A. A. Mitchell, as president of the club.

**Cincinnati, Ohio.**—Receivers Harmon and Smith, of the C. H. & D., have entered another suit for demurrage charges said to be due, the defendant in this case being the Wyatt Coal Co., of West Virginia. The amount asked for in the suit is \$6325, said to be the total amount of demurrage charges which accrued on shipments forwarded to Toledo in 1914 and 1915. The suit is the fourth of the kind filed recently by the receivers.

**Seattle, Wash.**—The College of Mines of the University of Washington in cooperation with the U. S. Bureau of Mines, offers five fellowships for the year beginning July 1, 1917. The value of each fellowship is \$720. It is possible for the holder to earn a master's degree in one year, the work being divided between research work in the experiment station of the Bureau of Mines and graduate study of the research subject in the university.

**Philadelphia, Penn.**—The Maryland Coal and Coke Co., Stephen Girard Building, has made application in West Virginia for charters for the Maryland Smokeless Coal Co., and the Maryland New River Coal Co., which propose to operate about 2800 acres of coal properties in the New River district of West Virginia. The present Boone, Smokeless and Bachman mines of the company have commenced the shipping of about 800 tons daily.

**Birmingham, Ala.**—Frank Nelson, Jr., and Leo K. Steiner, prominent coal operators, have purchased the properties of the Burnwell and Samoset Coal companies in Walker County and will make such improvements as are necessary for materially increasing the production. The Burnwell mine is located on the Southern Ry., while Samoset is on the Frisco Lines. These mines are of the slope class and work the Mary Lee or Big Seam.

**Pottsville, Penn.**—The Myrtle Coal Co. has awarded a contract to H. W. Falker, Ashland, for the erection of a new breaker on its anthracite properties in the southern section of the city. The company is arranging for the installation of new electrically driven fan equipment. A new 14-ft. vein discovery has been announced, located near Center St., in the business district of the city. The Myrtle Coal Co. is perfecting plans to work the property.

**Cincinnati, Ohio.**—The United States District Court has awarded to the Bell Coal and Mining Co. of Cincinnati a default judgment for \$60,000 against the Beech Coal Co., of Sharples, W. Va. The suit was for alleged breach of contract for the entire output of the defendant's mine at Sharples, with deliveries at the rate of 5000 tons a month from May 1, 1916. Failure of the defendant to enter a defense resulted in the rendition of the default judgment.

**Pineville, Ky.**—A. B. Culton, L. E. Hurst and Calvin Hurst have incorporated the Tanyard Hill Coal Co., with capitalization of \$25,000, and will complete development of its mines at Calaway, near Tejay, Ky. The incorporators have been developing the property and expect to begin shipping in July. The mine will be operated by a wire and 2-ton bucket to carry the coal across the Cumberland River to the railroad, the first plant of its kind in this vicinity.

**Columbus, Ohio.**—Announcement is made by Chairman Hughes, of the Ohio Utilities Commission, that the finding on the long-drawn-out investigation of the coal and railroad situation, will be held up for a time. Special investigators are still at work. The declaration of war has caused the delay to a certain extent, as the commission felt it could not "ride the railroads" under present conditions. A finding may be expected some time during the summer it is announced.

**Robindale, Penn.**—E. F. Saxman & Co., who recently purchased the Robindale Shaft of the Conemaugh Smokeless Coal Co., has purchased

several adjoining tracts from the Operators' Coal Mining Co., of Johnstown, in East Wheatfield Township for a consideration said to be \$20,000. It is proposed to develop the mine on a large scale and engineers are now at work laying out a new air shaft and figuring on a ventilating fan sufficient to care for the large acreage when developed.

**Birmingham, Ala.**—The Montervallo Mining Co., producer of high-grade domestic coal, is arranging to install a coal conveyor at its colliery, in order to facilitate operations and increase the production. There is a brisk demand for domestic coal at this time and dealers are having great difficulty in placing their requirements, almost all mines having already sold up their anticipated production through the summer months with the needs of the retailers probably not more than 50 per cent. covered.

**Morgantown, W. Va.**—Edward G. Donley, trustee, recently sold at public auction the undivided one-third interest of J. V. Thompson, in 215½ acres of Pittsburgh coal for \$57,589.53. This price was about \$800 per acre. The coal underlies the tract of land known as the Morton Van Voorhis farm, the Anna V. Moore, the Newton J. Maple, and the Tapp heirs' farms. The purchasers paid for the coal in cash when the sale was consummated. The transaction is one of the largest of the kind ever concluded here.

**Louisville, Ky.**—The high price of coal is one of the chief causes which are leading local manufacturers to discard their steam power equipment or their isolated electric plant machinery and equip for operating electrically on central-station service. During the last few weeks, salesmen for the Louisville Gas and Electric Co. have contracted with power customers for service to the extent of 1500 hp. of connected load, while prospects are for closing contracts with power users in the immediate future for an equal aggregate of service.

**Toronto, Canada.**—The Canadian Government has appointed a commission, consisting of Judge Joseph A. Chisholm, of the Supreme Court of Nova Scotia, Rev. John Forrest, D.D., of Halifax, and John J. Joy, president of the Longshoremen's Association of Halifax, to investigate the relations between the Dominion Coal Co., of Nova Scotia and its employees. The commission will inquire as to the wages paid by the company and also as to the complaint of unfair treatment made by members of the United Mine Workers of Nova Scotia.

**Nashville, Tenn.**—Following an opinion from Attorney General Frank M. Thompson to the effect that the comptroller is authorized to pay costs of an investigation of the coal situation out of the state funds, the investigation ordered by the last legislature will be undertaken. This inquiry will be conducted by the Tennessee State Railroad Commission, of which B. A. Enloe is chairman. Mr. Enloe has called for lists of operators, dealers, officials of carriers, etc., whom the district attorneys wish summoned as witnesses. Hearings will be held here and probably at Chattanooga, Knoxville and Bristol.

**Clarksburg, W. Va.**—The Utilities Coal Co. has acquired the coal properties of the Richter Coal and Coke Co., consisting of about 1200 acres, with an estimated 10,000,000 tons of coal in the Lost Creek district, about 12 miles from Clarksburg. The two main beds, known as the Red Stone and Pittsburgh, are each about 6 ft. thick. The new owners plan to increase the present capacity about 10,000 tons a month by the installation of new equipment, including an extension of the present tipples, at an estimated cost of \$25,000. W. S. Barstow & Co., 50 Pine St., New York City, operates this company.

**Whitesburg, Ky.**—The Cassell-Draper-West Coal Co. has been organized by George B. Cassell, W. H. Draper and W. H. West with a capital stock of \$50,000 for the development of the Tyler coal land tract three miles below Whitesburg on the main line of the Louisville & Nashville R.R., the initial work to start within two weeks. Orders for the necessary machinery have been placed and everything is practically in readiness to begin the development. George B. Cassell will be manager of the operation. The promoters propose developing a plant with a capacity of from 400 to 500 tons daily.

**Birmingham, Ala.**—The self-propelling barges of the Alabama & New Orleans Transportation Co., which have been used by the Tennessee Coal, Iron and R.R. Co., for some time in transporting coal down the Warrior River to the New Orleans market, have been released by the above company and have been taken over by the DeBardeleben Coal Co. for the same service. The Tennessee Coal, Iron and R.R. Co., as well as one or two other furnace-operating companies, are practically out of the coal market, almost the entire production of their mines being consumed in coke manufacture and for steam purposes at their own plants.

**Carlinville, Ill.**—Oil is not a mineral, according to a ruling of Circuit Judge Burton in the injunction case of the Mt. Olive and Staunton Coal Co. against the Ohio Oil Co. and other oil companies, in which the coal company sought to

restrain the oil companies from drilling at will through the coal fields of the southern part of the county. The restraint was asked on the ground that the coal companies had deeds for "coal and other minerals." The contention was that "other minerals" included oil. A restraining order was issued but after arguments the order was so modified as to permit the oil companies to drill within certain distances of the mines and so as to limit the number of holes to be bored within a given radius.

**Charlottesville, Penn.**—Coal shipping through Lock No. 4 in March totalled 16,899,000 bu. Navigation was suspended three days and fourteen hours during the month by reason of high water. Otherwise the record would have been much better. There were 383 lockages down stream consisting of 303 steamers, 1291 loaded craft, and 16,899,000 bu. of coal, 65,000 bu. of coke, 30 tons of iron products, 50,000 brick, 20,000 b.ft. of lumber, merchandise 212 tons, live stock, 9, passengers, 19. Up stream lockages amounted to 397, steamers 501, empties 1321, rafts 1, other craft 39, iron products 60 tons, sand 12,000 bu. gravel 9000 bu., stone 933 cu.yd., lumber 58,000 b.ft. The rainfall during the month was 2.58 in.

**Louisville.**—At a special meeting of the Ohio Valley Coal Operators' Association, held here recently, a committee consisting of C. F. Richardson, H. L. Tucker and W. W. Bridges was named to seek relief from the car shortage, which has handicapped the members of the organization for months. The committee will proceed to institute some definite action in the hope of obtaining relief and may present a formal complaint to the Kentucky Railroad Commission. According to Judge W. A. Wickliffe, of Greenville, Ky., there is much distress among the members of the mine-workers' families because of the short hours of labor made necessary because of the limited car supply. An average of about a 40 per cent. supply is complained of, Judge Wickliffe said, and some of the mines have suspended operations altogether.

**Whitesburg, Ky.**—The Louisville & Nashville R.R. will do considerable road building on short-line branches to tap new and undeveloped coal fields during the summer, according to announcements, in eastern Kentucky. Construction has started on the new 10-mile branch from Kilday to Seagraves Creek. Construction is soon to start on a 12-mile road up Lott's Creek, and it is expected that a line will be built up the Kentucky River from Kona Station to reach coal lands of W. H. Potter, recently purchased. The Baltimore & Ohio's Long Fork branch up Left Beaver to reach the developments of the Elkhorn Mining Corporation around Wheelright, will be completed within the next 30 to 60 days, and coal shipments will be started. Mining work has already been going on for some time. Taking all in all, railroad building will be quite active in the eastern Kentucky coal fields this year.

**Nanticoke, Penn.**—The officials of the Delaware, Lackawanna and Western Railroad Coal Department, Truesdale colliery, were given a banquet recently, in recognition of the men who recently established a world's record for the output of anthracite coal during a single month. During the month of March, Truesdale colliery produced 125,350 tons of coal in a working time of 213 hours, which gave the colliery a production of 588 tons per hour worked. The best day's output was made on Mar. 31, when 1841 mine cars were hoisted, or at the rate of 230 cars per hour being conveyed into the breaker for preparation. The above record is remarkable when it is considered the colliery is working about 300 men short of its normal force because of the general shortage of labor. The colliery has a remarkable place in the annals of anthracite coal mining, having produced during the years of 1912 to 1916, inclusive, 5,467,657 tons of coal. Its former best monthly record was made in March, 1915, working on a 9-hour basis, when the output was 127,709 tons.

**Columbus, Ohio.**—C. P. Torrey, superintendent of car service of the Hocking Valley Railway Co., has issued an order to agents and yardmasters for the regulation of coal cars on the line with the view of keeping cars at home and taking care of the coal as well as the ore trade. The original notice provided that cars of 57½-ton capacity with serial numbers from 20,000 to 22,999 and also 50-ton gondolas with serial numbers from 23,000 to 23,999 and 27,500 to 29,999 must be confined to local service entirely. Cars must not be used for other than coal loading at mines. The order leaves 5000 40-ton gondolas for loading to points off the Hocking Valley Lines. Restrictions are announced to prevent the cars from being ferried across Lake Michigan and to go into a Chicago territory. By a change announced at a later date the embargoed cars are permitted to go to Detroit and points between Toledo and Detroit. The reason for the order is to provide sufficient equipment for the ore trade, which is highly necessary under war conditions. Mr. Torrey claims it is not the intention to handicap shippers not engaged in the Lake trade and such shippers will receive percentage of tonnage to which they are entitled. Shippers having contracts to points on foreign lines are requested to take the matter up with the car service department of the Hocking Valley.



# Market Department

## GENERAL REVIEW

**Anthracite buyers abandoning caution and piling up orders at any price; production very light. Threatened withdrawal of coastwise vessels causes grave anxiety on the Atlantic Seaboard. Lake shipping under way. Middlewestern situation resembles midwinter conditions.**

**Anthracite**—The withdrawal of the April anthracite prices this week has only served in most instances to increase the consumers' and dealers' anxiety for coal. A great many buyers are abandoning all caution, and entering orders for May delivery subject to whatever price may prevail that month, as they must have coal irrespective of the cost. The increased wages granted the miners this week will undoubtedly be added to the selling prices, and this together with the very urgent demand from all directions will very likely see the full winter's circular in effect May 1. Labor difficulties, absenteeism from the mine, railroad congestion, slow movement, together with the breakdown of the Mahony plane, have all combined to make production very light, and it would not be surprising to see the month's output scarcely more than 5,000,000 tons. Even the most assured of the New England consumers are getting genuinely alarmed over the outlook, in view of the serious turn to conditions in water transportation. The railroads would obviously find it impossible to make up any serious deficiency in the water movement, and some now regard the situation on the domestic sizes as having passed from the famine stage into a complete absence of any coal at all.

**Bituminous**—The general increase in wage scales throughout the country has resulted in the inevitable stiffening in prices. Exorbitant wage advances of this kind always tend to increase absenteeism, especially at this time when outdoor occupations attract many of the miners with the result that production has been light. A heavy decline in export and bunkering tonnage has tended to relieve the situation at tidewater slightly, and receipts are better adjusted to requirements than has been the case at any time for nearly a year. The threatened withdrawal of a large number of coastwise vessels for transatlantic service has created more or less of a panic at New England points. Transportation in that direction by both rail and water is already inadequate, and it is felt that any further reduction will be little short of disastrous. The uncertainty concerning future contracts is well shown by the requests for bids by the cities of Baltimore and Boston, the former already having a deficit of \$50,000 in its coal appropriation for the current year, while Boston has fruitlessly requested bids on 100,000 tons of coal three different times.

**Lake Trade**—A sudden spurt of spot buying, caused in part by the inadequate shipments on contracts has stiffened up the market again, and the situation is as strong or stronger than a week ago. Evidence of the changed condition is seen in the wide distribution of coal into certain districts where they seldom go except in times of stress. Contracting is rather mixed, prices in Ohio ranging from \$3 to \$3.25 f.o.b. mine for Pittsburgh No. 8 mine-run based on the new mining scale, effective Apr. 16. There is still a very marked hesitancy on the part of both buying and consuming interests to commit themselves, due to the general uncertainty as to the outlook. Lake shipping is now under way, a considerable number of vessels having cleared from Lake Erie ports on Apr. 21 for points on Lake Michigan.

**Middle West**—Current conditions are more like those existing in the midst of severe winter weather rather than in the spring period, when mines are ordinarily closing down because of lack of business, and coal is going begging. The general public and large consumers have become definitely concerned over the situation, and conditions are truly remarkable. Prices and quality are becoming secondary considerations, and there is at this time no evidence of what the top of the market will be. The railroads are taking up heavy tonnages, and very little coal is going into storage. Contracting is tapering off, though an important railroad contract involving 100,000 tons for delivery during the next four months has been concluded at \$2.25 for mine-run, and \$2.50 for 2-in. lump coal, mines.

**A Year Ago**—Uncertainties in anthracite industry stiffen up the market. Spot bituminous dull, but contracts are being negotiated at good prices. Labor difficulties stimulate Pittsburgh district coal. Middle West quiet but steady, particularly on steam coal.

## Comparative Average Coal Prices

The following table gives the range of mine prices in car lots per gross ton (except where otherwise noted) on 12 representative bituminous coals over the past several weeks and the average price of the whole group for each week:

|   | Year Ago    | Apr. 28     | Apr. 21     | Apr. 14     | Gross Averages      |
|---|-------------|-------------|-------------|-------------|---------------------|
| <b>Boston</b>   |             |             |             |             |                     |
| Clearfields.....  | \$1.45@1.90 | \$4.50@4.75 | \$4.75@5.50 | \$4.50@5.25 | Dec. 16 \$4.48@4.90 |
| Cambrias and Somerset.....                                | 1.70@2.20   | 4.75@5.50   | 5.15@5.75   | 4.90@5.50   | Dec. 23 4.67@5.08   |
| Pocah. and New River.....                                 | 2.80@2.90   | 5.50@5.75   | 6.00@6.50   | 5.75@6.00   | Dec. 30 4.73@5.19   |
| <b>Philadelphia</b>                                       |             |             |             |             | 1917                |
| Georges Creek (Big Vein).....                             | 1.90@2.00   | 5.00@5.25   | 5.00@5.25   | 5.00@5.25   | Jan. 6 5.16@5.53    |
| W. Va. Freeport.....                                      | * 1.20@1.30 | 4.25@4.50   | 4.25@4.50   | 4.50@4.75   | Jan. 13 4.74@5.11   |
| Fairmont Gas mine-run.....                                | 1.35@1.45   | 4.25@4.50   | 4.25@4.50   | 4.50@4.75   | Jan. 20 4.54@4.98   |
| <b>Pittsburgh (steam coal)</b> <sup>2</sup>               |             |             |             |             | Jan. 27 4.64@5.03   |
| Mine-run.....   | 1.20@1.30   | 3.25@3.50   | 3.25@3.50   | 3.25@3.50   | Feb. 3 4.66@4.86    |
| 3-in.....   | 1.30@1.40   | 3.25@3.50   | 3.25@3.50   | 3.25@3.50   | Feb. 10 4.70@4.95   |
| Slack.....  | 1.05@1.15   | 3.25@3.50   | 3.25@3.50   | 3.25@3.50   | Feb. 17 4.67@5.04   |
| <b>Chicago (Williamson and Franklin Co.)</b> <sup>2</sup> |             |             |             |             | Feb. 24 4.95@5.29   |
| Lump.....   | 1.35@1.45   | 3.00@3.25   | 3.00@3.25   | 3.00@3.25   | Mar. 3 5.10@5.48    |
| Mine-run.....   | * 1.20@1.25 | 2.50@2.75   | 2.50@3.00   | 2.75@3.00   | Mar. 10 5.36@5.61   |
| Screenings.....   | * .95@1.10  | 2.25@2.75   | 2.50@2.75   | 2.75@3.00   | Mar. 17 4.80@5.19   |
|   |             |             |             |             | Mar. 24 4.64@4.94   |
|   |             |             |             |             | Mar. 31 4.20@4.44   |
|   |             |             |             |             | Apr. 7 4.07@4.36    |

Gross average<sup>1</sup>.....\*\$1.45@1.62 \$3.81@4.12 \$3.83@4.14 \$4.01@4.35  
<sup>1</sup> F. o. b. Norfolk and Newport News. <sup>2</sup> Per net ton. <sup>3</sup> The highest average price made last year was \$4.80@5.33 made on Nov. 25. \* Price lower than the week before. † Price higher than the previous week.

## BUSINESS OPINIONS

**Iron Age**—Steel manufacturers will meet on Thursday to arrange for distributing throughout the industry very considerable Government orders for vessel, navy yard and ordnance steel, which were largely put in the hands of the United States Steel Corporation. The Government is expected to place early contracts for fully 300,000 tons of plates, shapes and bars, and the amount it will want this year exceeds the first estimates, being now put at 1,000,000 tons. Already Government business taken at Pittsburgh amounts to 100,000 tons of plates. Intimations that the Government will be asked by the allies to aid them in securing special concessions on steel and copper are cropping up more frequently.

**American Wool and Cotton Reporter**—Great activity was displayed in the wool market during the week under review, especially in scoured and South American wool. Big orders have been given by the United States Government. Advances in price have been made. All fine wools have been strong. Speculating in anticipation of Government business is discouraged by the entire trade.

**Bradstreet**—War preparations, certainty that the government's wants are receiving precedence over all others, beneficial rains and growing weather throughout the surplus winter-wheat states, feverish buying of foodstuffs, mobilization of agricultural forces to supply exigent needs, and tangible evidence that food areas are being greatly increased, stand out as prominent features of this week's news. While there is a streak of conservatism here and there, and evidence that high prices have affected sales of other things than food in some sections, as well as complaints that salaried people will have to cut down expenditures for many articles, the country's industrial producing units are still rushed in trying to keep abreast of demands.

**Bradstreet**—Hesitancy on the part of buyers has been apparent during the week. Apart from uncertainty as to the conditions our participation in the war will bring, chilly weather has been a factor. The talk of economy on the part of consumers, started in high quarters and also by one or two women's associations, has also had its effect. To this is added the possible effects of increased taxation. It is recognized, too, that all conditions tend to still higher prices on all kinds of commodities with their natural influence on consumption.

**Dun**—A widening field of business is influenced by war conditions, and ordinary requirements in many instances are subordinated to the pressing necessities of the Government. Industries and trades which had experienced a lull from the previous noteworthy activity now respond to extensive Federal buying, and overtime work is enforced to accelerate the production and distribution of various supplies intended for military uses. Commercial failures this week are 268, against 251 last week, 241 the preceding week and 333 the corresponding week last year.

**Marshall Field & Co.**—Current wholesale shipments of dry goods have been very much in excess of the corresponding period of a year ago. Road sales for both immediate and future delivery show good gains over the same week 1916. Merchants have visited the market in smaller numbers. Collections are much heavier than a year ago.

## CONTRACT PRICES

**Boston**—For the third time the city of Boston has advertised for bids on 100,000 tons of coal, and received no replies. As a result the Mayor sent for various dealers to attend a conference, at which it was brought out that no single dealer could attempt to supply the entire tonnage, and that a supply could not be assured in any event unless contracted for at once and at \$15 per ton. In view of the fact that the city paid an average price of only \$3.68 per ton last year, the Mayor declared that he would make another attempt to secure bids on this business.

**New York**—There were but two bidders on the proposal of the Central Purchase Committee to furnish and deliver 86,900 gross tons of buckwheat No. 2 coal to the Department of Docks and Ferries, opened on Apr. 23. There was an alternative proposal of the same amount of buckwheat No. 1. Deliveries are to be made at the rate of 7900 tons monthly beginning in May and continuing for 11 months. One bidder submitted a price of \$7.75 per ton for May, June and July. The second bid was for seven months supply and the prices submitted were \$7.39 per ton for May and June; \$7.69 for July, August and September, and \$7.97 for October and November. On the alternative proposal for buckwheat No. 1 one bid of \$8.90 per ton for deliveries in May, June and July was received. For furnishing and delivering 1800 gross tons of semi-bituminous coal for the fire-boats of the Fire Department there was one bid of \$6.44 per ton. These prices show a decided increase over the bids received on Mar. 29 for furnishing and delivering about 5000 gross tons of coal during April. At that time quotations for buckwheat No. 1 ranged from \$5.97 to \$6.36 per ton and for buckwheat No. 2, \$5.95 to \$6.25 per ton.

**Baltimore**—There are very heavy inquiries for coal, but operators are holding off feeling they have all the business they care to take already. Contract prices are quoted nominally at \$4 to \$4.25 per ton at the mines. The various city departments of Baltimore already show a deficit of \$50,000 in their coal bill for the current year, and additional bids are soon to be asked for. It is understood that the Pennsylvania R.R. has recently concluded two contracts, aggregating 400,000 tons of coal at \$2.25 per gross ton, which is \$1 more than at the same time last year.

**Hampton Roads**—In addition to the requests for bids on a million tons by the Navy Department, one of the railroads is asking for prices on 500,000 tons, and a large public service corporation is also inviting tenders on 100,000 tons. Bids for furnishing the United States Army Engineers with from 700 to 800 tons of Pocahontas during May, were \$5.50, \$5.49, and \$5.37½ per gross ton.

**Buffalo**—The only new thing in the contracting line is a report that the Pittsburgh district has put up its prices 20c. a ton to meet the advance in wages. It was impossible to get anything for \$3 before this was done, so the minimum contract price is not less than \$2.50, with very many sellers refusing to make any contracts at all.

**Chicago**—Contracting is tapering off, due to the many uncertainties in the situation, neither buyers nor sellers being inclined to commit themselves. The most important piece of business closed recently was a railroad contract involving 100,000 tons of coal for shipment during the next four months at \$2.25 per ton for mine-run, and \$2.50 per ton for 2-in. lump f.o.b. mines. This is the highest price paid to date for coal moving to any railroad.

**St. Louis**—Some contracts have been made for railroad egg coal at \$2.25 for shipment in April and May, and \$2.65 to \$2.75 during July and August. Some Standard 2-in. lump has been contracted at \$2.50. Operators are generally refusing to contract except where their previous agreements obligate them to do so. Some railroad contracts for delivery over the next two or three months, the roads agreeing to furnish the necessary equipment, have been made on the basis of \$2 per ton for a Standard mine-run coal.

## Atlantic Seaboard

### BOSTON

**Hampton Roads** prices relatively easy on account of boat shortage but not much trading in spot coal. **Pennsylvania** grades also respond in price to the mild weather conditions. **Anthracite** deliveries still light, and the trade is worried.

**Bituminous**—Pocahontas and New River shippers seem to be marking time for the present, nothing very significant having developed the past week. Coal is not being sent to Tidewater except to load tonnage on contract and receipts at the piers are much better adjusted to requirements than has been the case for nearly a year. Very few transient boats are reporting and surplus coal is available only in relatively small lots. Even the largest agencies are deliberate in giving options even for a few hours on what would ordinarily be negligible quantities. At the same time, dispatch is good and the market easy at the quotations reported a week ago.

The short car-supply and the surplus traffic on the roads farther north have together caused an extra demand on the Virginia railroads, from the West, and practically all the operators on those lines are making as heavy shipments in that direction as conditions permit.

The Hampton Roads factors are waiting anxiously the outcome of the conference to be held this week in Washington on the proposal of the council of national defense to use coastwise vessels to carry supplies for the allies. The object is to ascertain whether such drastic action can be taken without such an upset of service all-rail that this territory would suffer acutely. Interests here are doing everything possible to put the facts clearly before the authorities. Last year nearly 6,400,000 tons was received by water at the port of Boston alone and there is an equal amount coming to other New England ports, or roughly 13,000,000 tons in all. At that, in 1916, the Boston & Maine and Boston & Albany railroads are said each to have moved 50 per cent. more coal all-rail than in any normal year. One can infer what the situation would be if any considerable tonnage were taken out of the coastwise trade.

Delivered prices are no easier. With present receipts, even with the less consumption due to the warm weather, contractors are barely able to keep consumers supplied, to say nothing of accumulating stocks. There are a good many hectic efforts to get coal on hand for future needs, but so far they are without much result, at least in quantity. A few scattering cargoes of Southern coals have been sold for around \$10.50@11 alongside Boston. Small lots for inland delivery are quoted at \$11@11.25.

The City of Boston again advertised, this time for bids on 100,000 tons, 40,000 of which was for steam coal, and not a single bid was received. This was the third time proposals were solicited and as a result the mayor sent for various dealers to attend a conference. The dealers told him that no one dealer would be willing to bid for the entire contract, owing to the continued uncertainty in the market, and that a supply could not be counted upon unless contracted for at once, and at \$15 a ton. The mayor declared, however, that he would make another attempt to secure bids. In 1914, for the same kind of coal, the city paid an average price of \$3.68.

The Pennsylvania grades continue about on the basis reported a week ago. Under conditions as they are prices are bound to fluctuate from time to time, at least during the next month or so. On contracts most of the mines shipping to this market are not making a very good showing. In many cases not better than 50 per cent. on season orders. The operators say they are doing the best they can under the circumstances.

There is a wide range in price. Some of the poorer grades can be bought as low as \$4.25 f.o.b. mines and on others up to \$5.50 is being paid for spot shipment.

A general embargo was put into effect Apr. 20 by the Boston & Maine R.R. against traffic via Troy or Rotterdam, N. Y. This cuts off all shipments originating on or shipped via the

N. Y. C., at least until Apr. 25 and probably for a few days longer. It will not be raised until the accumulated traffic at the transfer points is cleared up.

It continues difficult to assemble cargoes at the loading piers for Tidewater shipment. There are complications in plenty. The erratic movement of boats at present being one of them. There is no let-up in inquiry and prices in this quarter continue firm.

Bituminous at wholesale is quoted about as follows, f.o.b. loading ports at points designated, per gross ton:

|                                    | Clearfields | Camb. and Somersets |
|------------------------------------|-------------|---------------------|
| Philadelphia.....                  | \$5.75@6.50 | \$6.00@6.75         |
| New York.....                      | 6.00@6.75   | 6.25@7.00           |
| F. o. b. mines.....                | 4.25@5.50   | 4.75@5.50           |
| Alongside Boston (water coal)..... | 9.50@10.00  | 9.75@10.50          |

Pocahontas and New River are quoted at \$5.50 @5.75 f.o.b. Norfolk and Newport News, Va., for spot coal, and \$11@11.25 on cars Boston or Providence for inland delivery.

**Anthracite**—There is no relief in sight for New England coal dealers. If marine transportation is actually taken in anything like the proportion mentioned there will be an extremely light supply of hard coal for this market. The dealers who have always taken coal by water are finding how next to impossible it is to get delivery all-rail. The cars are simply not to be had in the quantities required, and the railroads would be powerless to handle the extra traffic if they were. The "independents" are shipping small tonnages all-rail but not enough to affect the situation. In most cases they are confining their deliveries to regular customers.

The conservative part of the public is getting genuinely alarmed over the prospect. Already owners of large business blocks are trying to accumulate coal in basements as a matter of insurance against possible famine next winter. There are some who go so far as to say that this market will face not a famine but an absence of domestic sizes. Broken and pea are now practically out of the question. Dealers are now not at all fussy about the make-up of a cargo so long as something is shipped. "Independent" quotations are now from \$1.35@1.60 f.o.b. mines above the net circular of the companies.

### NEW YORK

**Demand for anthracite continues heavy.** Shippers are refusing new orders and conditions are unprecedented for April. Bituminous stocks low with a brisk demand and prices strong. Mine workers leave for other industries.

**Anthracite**—With the local Tidewater docks practically clear of coal the situation is unprecedented for this season of the year. There is less coal here than at any previous time, outside of strike times, within the memory of long-time dealers. Buyers are having a serious time and many retail yards are clear of supplies.

Production has been far below demand and some operators believe that the shipments for this month will be below 5,000,000 tons. Most of the producers have been refusing all additional orders until those already booked have been filled. Salesmen have practically ceased to solicit new business.

There have been many inquiries from New England and Boston buyers were offering \$6 at the mines for quick shipments of egg, stove and chestnut. As a rule mine prices are higher than on the New York Tidewater basis and much coal is being diverted to inland buyers. Much complaint has been received from inland salesmen of slow shipments.

Supplies of egg and stove are larger than chestnut, some of the largest retail dealers saying they are entirely out of the latter size. Independent coals have been quoted at \$7.50, f.o.b. this week, but most sales reported with a few exceptions have been at from \$1 to \$1.25 above the circular.

The steam-coal situation is a source of trouble. Stocks are far below normal and prices are high. Many shippers refuse to name prices because they have no coal to sell. Scarcely any contracts have been closed for next winter's supply for the downtown office buildings and hotels and many large consumers do not feel sure they will receive all the buckwheat sizes necessary to keep their buildings warm.

Buckwheat No. 1 is bringing in most cases the same as pea, \$5.50 to \$6.75, but sales of the cheaper grades have been made at 25c. less. Rice and barley are more plentiful than buckwheat No. 1.

Current quotations, per gross ton, f.o.b. Tidewater, at the lower ports are as follows:

|             | Circular  | Individual  |
|-------------|-----------|-------------|
| Broken..... | \$4.95    |             |
| Egg.....    | 4.95      | \$6.00@6.50 |
| Stove.....  | 5.20      | 6.00@6.50   |
| Nut.....    | 5.25      | 6.00@6.50   |
| Pea.....    | 3.60@4.10 | 5.50@5.75   |
| Buck.....   | 3.70@3.80 | 5.25@5.50   |
| Rice.....   | 3.00@3.30 | 4.50@4.75   |
| Barley..... | 2.50@2.80 | 3.50@3.75   |
| Boiler..... | 2.20      |             |

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

**Bituminous**—Stocks at New York Tidewater are low and while negotiations are in progress looking toward an increase in wages for the mine workers, there have been many interruptions of mining, due to petty labor disturbances, some of which have become so serious that violence has been resorted to on the part of the strikers.

Conditions are serious. There is no coal on hand and it is doubtful if an increase in wages will be an inducement for the mine-workers to remain in the coal fields or whether they will continue to leave, as they are now doing, for the munition plants or other industries. In the opinion of many operators, men, and not cars, will be the controlling factor in the situation for many months to come. Higher wages will not be able to hold the men and it is a debatable question whether those who do remain will desire to work any steadier than they have been doing for some time past.

With the opening of navigation on the Lakes this week, car supply ought to improve, many cars now engaged in carrying other commodities having shorter runs. There has been an improvement in car supply but lack of labor has held the production down.

The high-grade coals are hardly in sufficient supply to take care of regular contracts and the consumer fills in with what free coals are obtainable.

Some operators are closing scattered contracts involving small tonnages at from \$3.75 to \$4, as against from \$3 to \$3.50 earlier in the year. The railroads are far from taken care of for next winter's supply, but at present, are not urging contract making.

Not much is heard of bunkering, owing to the restrictions placed on announcement of sailings by the authorities.

Current quotations, per gross ton, f.o.b. Tidewater, for various grades, are as follows:

|               | Port Reading | South Amboy | Mine Price  |
|---------------|--------------|-------------|-------------|
| George Crk.   |              |             |             |
| Big Vein..    | \$6.75@7.00  | \$6.75@7.00 | \$5.00@5.25 |
| Tyson...      | 6.50@6.75    | 6.50@6.75   | 4.75@5.00   |
| Clearfield..  | 6.25@6.50    | 6.25@6.50   | 4.50@4.75   |
| South Frk..   | 6.50@6.75    | 6.50@6.75   | 4.75@5.00   |
| Nanty Glo..   | 6.50@6.75    | 6.50@6.75   | 4.75@5.00   |
| Som'r. Co..   | 6.25@6.50    | 6.25@6.50   | 4.50@4.75   |
| Que'ho'ing..  | 6.50@6.75    | 6.50@6.75   | 4.75@5.00   |
| W. V. Fa'rmt' |              |             |             |
| Th'r'qua..    | 6.25@6.50    | 6.25@6.50   | 4.50@4.75   |
| Mine-run...   | 6.25@6.50    | 6.25@6.50   | 4.50@4.75   |
| West. Md..    | 6.25@6.50    | 6.25@6.50   | 4.50@4.75   |

### PHILADELPHIA

**Anthracite shipments far behind demand.** April retail prices withdrawn and orders refused by shippers. Premium prices to outside points. Steam coals hard to get. Bituminous shows increased strength and buying improves. Men indifferent as to work and production falls off. Prices unchanged but firm.

**Anthracite**—Another strenuous week is finding the dealers and shippers unable to keep pace with the demand. The public is now thoroughly awakened to the seriousness of the situation and the dealers report they have sold more coal than they can possibly deliver in the next two or three months. A week ago the largest retail company announced the withdrawal of the April retail prices, owing to the likelihood of an increase in wages to the miners, which would no doubt be reflected in the prices to the dealers. This announcement caused a rush to all dealers on the part of customers to get protection.

Since the middle of the month most shippers have practically refused to book any more orders and the salesmen of even some of the larger companies are keeping close to their offices. As a consequence of the uncertainty of the prices the dealers are clamoring to have their orders entered for May, subject to whatever the selling price may be for that month, as they must have coal regardless of price.

The dealers have only secured enough coal to care for their transient business, cool weather causing the demand to keep up later than usual. In the meantime the storage orders are piling up to an aggregate greater than usual on account of the general war scare, which is boosting the price of all commodities, while customers who placed these orders will expect the coal to be billed at the rates advertised for this month. Usually this had occasioned no particular hardship, as most dealers figured they could easily stand the 10c. increase from month to month. Now, however, they have real cause for worry on account of the increase in wages demanded by the men, as there is not the least doubt that the wholesale prices will be advanced accordingly. In fact, it would not be surprising to see the full winter circular go into effect on May 1.

If the prices are increased the retail men who have accepted many orders at April prices are sure to lose a considerable sum of money. There are a few dealers of considerable prominence in the city who refused to accept any orders except for such coal as was in their yards, most of which was billed at or near the old winter retail figures.

It would now seem that the prices were lowered by the big companies just long enough to put the retail man in a hole, as the dealer has never been in a position to assume the attitude of the big shippers and cancel all unfilled orders at the end of each month. When prices drop in



the spring they book more orders the first month than can be delivered and they have always been compelled to take the loss due to the advance of 10c. per month. This year with the demand on them abnormal and the shipments lighter than in other years, they are facing a situation that is likely to demand some radical changes in their system of buying and selling.

While stocks of all sizes are low, pea coal continues to be the shortest size. Many of the dealers have none on hand and cannot hope to receive enough for their present requirements. Some of the larger dealers have expressed a willingness to pay \$3.50 at the mines for this size; even at that very little finds its way here and the dealers are indulging in the old winter practice of endeavoring to persuade their customers to take whatever sizes they may have in stock. And under present conditions many people are seeing the wisdom of getting coal in the cellar regardless of size.

There are rumors of premium prices on all the other sizes, and the outside territory, particularly New England, is in almost a state of panic and paying prices of \$1 above the winter circular for all sizes. The tense situation is sure to help eliminate the price-cutters and we know some of them have already advanced their rates and still others who refuse to quote at all unless they have the coal in the yard.

Several shippers are announcing stringent credit regulations affecting all their trade and are advising their customers that no shipments will be made to any dealer whose bills are not met promptly in thirty days. This will mean somewhat of a hardship to some. At this time of the year when the retail men are engaged in filling cellars for future use the collections are always poor and cannot be compared with the winter months when there is so much cash transient business.

On account of the accident to the machinery at Mahanoy Plane much of the Reading Co. tonnage continues to be diverted from this market and has added very much to the inconvenience of the trade in the city. It is now given out that it will take at least four more weeks to repair the plane. Probably the greatest effect of the accident has been felt by the steam trade who have been considerably hampered to keep up their stocks of coal. Steam coals of all sizes continue to be scarce and it is very difficult for new business to be accommodated with any considerable tonnage.

The prices per gross ton, f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for tide, are as follows:

|             | Line Tide     |             | Line Tide     |
|-------------|---------------|-------------|---------------|
| Broken..... | \$4.50 \$5.65 | Buck.....   | \$2.50 \$3.40 |
| Egg.....    | 3.65 4.75     | Rice.....   | 2.00 3.00     |
| Stove.....  | 3.90 5.10     | Boiler..... | 1.80 2.90     |
| Nut.....    | 4.00 5.05     | Barley..... | 1.50 1.75     |
| Pea.....    | 2.80 3.70     |             |               |

**Bituminous**—Buying has been quite brisk and inquiries for large tonnages have once more appeared after a slight lull. The chief cause of the stiffening in prices lies in the fact that the miners in the central district, following the action of the operators in the Pittsburgh territory in granting an increase of 20 per cent., will also receive an increased wage. It seems that the only reason why the operators and the miners have not reached an agreement, is owing to the miners insisting on the elimination of the system of pushing cars by hand. It seems to be the general opinion that a wage increase will be granted, but surely not the 33 1/3 per cent. asked.

On account of wage increases in various districts the price of coal is bound to advance, and as a matter of fact this contingency has been provided for in most of the contracts which are now in effect.

During the week the tonnage was somewhat small in proportion to the requirements of the trade. In the central district it seems the men are somewhat indifferent pending the wage outcome, while in the other regions most of the men with a patch of ground are taking two or three days off in order to till it.

The car supply recently has been very inadequate, the average running between 30 per cent. and 40 per cent., with the railroad movement also much delayed.

As a consequence of these conditions the prices of the better grades have been checked in the slight downward movement that was manifest for the past few weeks and at this time quotations remain at or about the level of a week ago, with some prospects of an increase. The present situation is aptly described by one prominent shipper who said that "no really first-class coal should have any trouble in bringing \$5 in this market."

|                              |             |
|------------------------------|-------------|
| Georges Creek Big Vein.....  | \$5.00@5.25 |
| South Fork Miller Vein.....  | 5.00@5.25   |
| Clearfield (ordinary).....   | 4.50@4.75   |
| Somers (ordinary).....       | 4.50@4.75   |
| West Va. Freeport.....       | 4.25@4.50   |
| Fairmont gas lump.....       | 4.50@4.75   |
| Fairmont gas, mine-run.....  | 4.25@4.50   |
| Fairmont gas, slack.....     | 4.00@4.25   |
| Fairmont lump, ordinary..... | 4.25@4.50   |
| Fairmont mine-run.....       | 4.00@4.25   |
| Fairmont slack.....          | 4.00@4.25   |

## BALTIMORE

**Anthracite** trade at a standstill pending adjustment to new conditions. Bituminous production light due to labor and car shortages. Operators refusing further contracts.

**Anthracite**—There is little or no hard coal business here for the time being. The fact that the retail trade is maintaining its winter schedule with the additions made necessary by the new wholesale rates on broken, pea and buckwheat, has prevented any rush of orders. Coal men are endeavoring, with very poor success, to get low-priced coal from the producers who have offered anything like an April cut. Some days last week the arrivals of such coal were confined to a very few cars. Coal offices are dull, and everybody is in uncertain frame of mind about the future.

**Bituminous**—A much tighter market is confronting the trade due to poor production and movement. When cars are available the mines frequently can not get them loaded as many of the miners are devoting considerable time to farming. Troubles in several smaller mines in the Georges Creek region led to strikes there the past week. Some coal destined for this city was confiscated for railroad use.

Prices to the trade at the mines are about as follows: Georges Creek Tyson, \$4.75@5; Somerset, \$4.50@4.75; Quemahoning, \$4.75; Clearfield, \$4.50; Freeport, \$4.25; Fairmont gas, three-quarter, \$4; run-of-mine, same, \$4; slack, same, \$3.75.

But few contracts are noted here, nearly all producers feeling they have assumed all the obligations they care to take on, despite a flood of inquiries for deliveries over the year or for six months. Where given at all prices run from \$4 to \$4.25, mine basis. The city of Baltimore will soon ask for more bids on coal. Various departments already show a deficit of over \$50,000 for the present year, and there is talk of substitution of oil for coal as fuel in city plants. The Pennsylvania R.R. is understood to have recently made two contracts aggregating 400,000 tons at \$2.25 gross. This is about a dollar a ton more than the same time last year.

In the big lot of bids for bituminous coal desired by the Navy Department, two points on the Chesapeake Bay are included. At one there is to be delivery of 1,000,000 tons, of which 300,000 is for storage, and at the other the delivery calls for 200,000 tons for naval vessels. Piers and other facts are withheld from publication.

**Export and Bunker**—The export movement is confined largely to Cuban shipments at present, although several cargoes were recently noted for South American points. Bunker business has been handicapped by war zones which have slowed down shipment both inside the capes and coastwise.

## HAMPTON ROADS

Dumpings very heavy. No change in prices. Navy asking for prices on 1,000,000 tons.

The past week has shown a very favorable increase in tonnage dumped over the Hampton Roads terminals, being some 70,000 tons greater than the preceding week. Reports from the mines indicate that car supply is worse than for some time past. Spot prices show no change from last week and are expected to get stronger on account of inquiries for heavy tonnages by various large consumers.

The Navy Department has asked for prices on 1,000,000 tons and one of the railways is asking prices on 500,000 tons, while a large public-service corporation is also inviting quotations on 100,000 tons. This demand for future delivery is bound to have a stiffening effect on prices. Bids opened by the United States Army Engineers for their requirements for May, amounting to 700 to 800 tons, were as follows, per gross ton for Pocahontas: C. M. Kaylor, \$5.50; the Nottingham & Wrenn Co., \$5.49; Norfolk Coal and Ice Co., \$5.37 1/2.

The Virginian Ry. has awarded contracts aggregating some \$750,000 for improvements to its coal pier at Sewalls Point. The coal trimmers employed at Norfolk and Newport News have made demands on the Norfolk & Western, Chesapeake & Ohio and Virginian railways for an increase in pay.

Prices for prompt delivery, for Pocahontas and New River run-of-mine, for cargo coastwise and export, are \$6@6.50 per gross ton; for bunker delivery, \$6.50@7 per gross ton plus 15c. trimming; for local delivery on track, \$5.50@6 per net ton; for contract, \$3.25@3.50 per net ton. Anthracite, \$9 per net ton delivered.

A large tonnage of high volatile coal is moving via Hampton Roads, principally to coastwise ports. A strict censorship is maintained in regard to the movement of shipping, but it is known that a large tonnage of coal is being exported.

Dumpings at the Hampton Roads piers for the past several weeks were as follows:

|                   | Mar. 31        | Apr. 7         | Apr. 14        | Apr. 21        |
|-------------------|----------------|----------------|----------------|----------------|
| Nor. & West....   | 152,909        | 174,420        | 119,340        | 142,018        |
| Ches. & Ohio....  | 114,477        | 112,128        | 106,188        | 120,257        |
| Virginian.....    | 96,084         | 80,457         | 66,383         | 99,249         |
| <b>Total.....</b> | <b>363,470</b> | <b>367,005</b> | <b>291,911</b> | <b>361,524</b> |

## Ocean Shipping

## OCEAN FREIGHTS

The freight market is practically the same as a week ago, and although a few steamers were chartered for export coal during this period, none of these fixtures have been reported.

We would quote freight rates on coal by steamer as follows:

| Europe                 | Apr. 16       | Apr. 23       |
|------------------------|---------------|---------------|
| West Coast Italy.....  | \$75.00 about | \$75.00 about |
| Marseilles.....        | 75.00 about   | 75.00 about   |
| Spain (Atlantic)*..... | 30.00 about   | 30.00 about   |
| Spain (Mediterranean)* | 32.40 about   | 32.40 about   |

Note—Charters for Italy, France and Spain read: "Lay days to commence on steamer's arrival at or off port of discharge."

| South America          |               |               |
|------------------------|---------------|---------------|
| Montevideo.....        | \$27.60 about | \$28.80 about |
| Buenos Aires.....      | 27.60 about   | 28.80 about   |
| Rosario.....           | 28.80 about   | 30.00 about   |
| Rio Janeiro.....       | 25.00@27.00   | 25.00@28.00   |
| Santos.....            | 28.00@30.00   | 28.00@30.00   |
| Chile (good port)..... | 17.00@18.00   | 17.00@18.00   |

| West Indies          |             |             |
|----------------------|-------------|-------------|
| Havana.....          | 5.25@ 5.50  | 5.50@ 6.00  |
| Cardenas, Sagua..... | 7.00 about  | 7.00 about  |
| Cienfuegos.....      | 7.75@ 8.00  | 8.00 about  |
| Port au Spain.....   | 10.00 about | 10.00 about |
| St. Lucia.....       | 10.00 about | 10.00 about |
| St. Thomas.....      | 8.00@ 9.00  | 8.00@ 9.00  |
| Barbados.....        | 10.00 about | 10.00 about |
| Kingston.....        | 7.25 about  | 7.25@ 7.50  |
| Curacao.....         | 9.00 about  | 9.50 about  |
| Santiago.....        | 7.75@ 8.00  | 8.00@ 8.25  |
| Guantanamo.....      | 7.75@ 8.00  | 8.00@ 8.25  |
| Bermuda.....         | 6.50 about  | 6.50 about  |
| Mexico.....          |             |             |
| Vera Cruz.....       | 8.50@ 9.50  | 9.00@10.00  |
| Tampico.....         | 8.50@ 9.50  | 9.00@10.00  |

\* Spanish dues for account of cargo. \* And p.c.  
\* Or other good Spanish port. \* Net.

W. W. Battie & Co.'s Coal Trade Freight Report.

## COASTWISE FREIGHTS

Five dollars was quoted this week on 1000-ton barges, Hampton Roads to Boston, and \$4.25 to Providence. No rates are heard on larger transportation.

For New York loading \$3 is named to Boston and \$2.25 to Long Island ports. \$4.15 has been quoted to Bangor, and other Penobscot points on the basis of \$4.

## Lake Markets

## PITTSBURGH

Spot demand lighter except for Pennsylvania R.R. buying. Wage advance affects sliding scale contracts.

The wage advance just arranged increases the mining rate 10c. per ton and effects an average advance in all wages of about 20%. The sliding scale contracts based on the mining rate provide greater advances in the price of coal than the advance in the mining rate, to take care of wage advances other than those in the mining rate, and the settlement price on these contracts will advance by from 15c. to 20c. Open market prices are not expected to be affected materially, as it has been a foregone conclusion for some time that a substantial wage advance would occur.

There has been decreased buying of spot coal in some quarters, but the Pennsylvania R.R. suddenly came into the market and made purchases from many sellers, whereby a decline has been averted and the spot market is at least as strong as a week ago. The spot market on the whole is not particularly active. Most consumers who do not have regular contracts are obtaining regular shipments on the basis of a weekly adjustment of price, at about the prevailing spot market.

A few vessels left Lake Erie ports Monday to get ore from Lake Michigan ports, but none have yet left to make the trip through the Soo. There is a passage there, but Lake Superior itself is an unknown quantity, the ice having been particularly thick. A great deal of Lake coal tonnage has been put under contract, subject to adjustment when a regular market is established and it is thought that this cannot now be long delayed.

We quote spot coal at \$3.25@3.50 for slack and steam mine-run and 3.75@4 for 1/4-in. gas, per net ton at mine, Pittsburgh district. Contract prices are largely nominal, at between \$3.50 and \$4.

## BUFFALO

All prices strong. Bituminous quiet but anthracite is very active. Mining slow and cars hard to get. Bituminous prices higher.

**Bituminous**—The chief change in the market is in the added strength to coal from the southwestern Pennsylvania fields, including the Ohio No. 8, which is finding its way back here after having been generally shut out for a while. The jobber finds it quite as hard to make sales as formerly.

but the conditions are such that he is able to command good prices, for the consumer is not in position to dictate. Cars are about as hard to get as ever and miners are either scarce or tied up by car shortage.

Everything works against the consumer and it promises to continue so right along. What will happen when the Government begins to commandeer coal in big blocks is not hard to tell. The ordinary consumer will have to go without a full supply. Reports of efforts to increase the natural-gas supply are significant.

The various sorts of bituminous coming to this market have readjusted themselves, so that No. 8 is again about on a par with Pittsburgh, but with Youghiogheny always leading. The cheap West Virginia smokeless is gone. Quotations are as follows:

|                             |             |
|-----------------------------|-------------|
| Youghiogheny Gas.....       | \$4.75@5.25 |
| Pittsburgh Steam.....       | 4.50@5.00   |
| Bessemer.....               | 4.40@4.90   |
| Ohio No. 8.....             | 4.35@4.85   |
| Allegheny Valley.....       | 4.30@4.80   |
| Cambria Co. Smithing.....   | 4.90@5.40   |
| Pennsylvania Smokeless..... | 5.00@5.50   |
| All Slack.....              | 4.25@5.25   |
| Cannel.....                 | 5.60@6.10   |

All prices per net ton f.o.b. Buffalo.

**Anthracite**—The rush to put in coal for winter goes on and it is said that the mines will not be able to meet the demand for a long time, if at all. There is no real shortage, but everybody wants coal against a possible repetition of the experiences of last winter. All sorts of stories of an early advance of prices are afloat, which makes the clamor all the worse. The independent operators are as short as any of the standard companies and are beginning to charge fancy prices. There is talk of \$10 and \$12 coal before long. Shipping agents and local dealers are booked so far ahead that they often refuse to take any more orders.

The spectacle of long lines of coal wagons waiting hour after hour at the city trestles resembles last winter, when coal was actually in need. The shippers claim that they can meet the year's needs as they did last year, especially with the start they have, but it is a fact that the mines are all doing poorly, for both men and cars are as short as ever and promise to remain so. Just now there is contention between lake, rail line and local routes, so that it is found necessary to make a close division to keep all as nearly satisfied as possible.

Lake rates are opening at 60c. per net ton to the big Chicago docks, with prospect of more to the small ones, and 75c. to Sheboygan and Menominee, with no other ports fixed yet. Fueling prices to Lake steamers are beginning at \$5.25 charged by one dock, with the others declining to make a price. The opening price last season was \$3.10. Clearances so far are 12,600 net tons to Chicago, 25,800 tons to Duluth and Superior, 16,200 tons to Fort William, 6000 tons to Milwaukee and 2500 tons to Sheboygan; total, 63,100 tons.

#### DETROIT

**Diminishing supply of coal on tracks imparts greater firmness to prices. Domestic trade rather dull. Lake vessels get fuel prices.**

**Bituminous**—Though the demand from consumers of steam coal is not materially stronger or more general, prices are showing a firmer tendency on all sizes. This situation is the result of a shortening in the supply of free coal on tracks, probably attributable to shortage of cars in the mining districts. It is asserted by some of the jobbers that the quantity of free coal on hand in the last week or 10 days is the least for several months. With the curtailed supply of coal available for prompt delivery, the market is relieved of the selling pressure of two weeks ago and users of steam coal are learning that shipments from the mine cannot be had at the prices they were paying jobbers.

Lump and egg or slack is now being quoted at \$3.25 to \$3.50, on cars at the mines. Mine-run, for which demand is lighter, is offered at \$3 to \$3.25. Little smokeless coal is obtainable, though some of the jobbers are quoting mine-run at about \$4 and lump and egg at \$4.75 to \$5. Very little business is being done in domestic coal for family or factory use in heating. Though stocks in retail yards are low the dealers are showing little interest in renewing supplies at present, preferring to retain their funds in the form of cash, until nearer the period when domestic consumption will be more pressing.

**Anthracite**—Slow delivery, or no delivery at all of anthracite ordered for April is causing some complaint among dealers who thought to save the April discount by ordering early. Retail dealers are already taking some orders for coal to be delivered now for use next winter.

**Lake Trade**—With the announcement, Apr. 21, that rain and wind were opening the ice barrier across the Straits of Mackinac, a considerable number of coal carriers cleared from Lake Erie ports with coal for ports on Lake Michigan, which are said to be much in need of renewed supply. It is unlikely navigation to Lake Superior ports will be under way before May 1, as the ice in St. Marys River, above Sault Ste. Marie is still solid and heavy, though the channel below the town has been opened by an ice-breaker. The price for vessel fuel, fixed during the week is \$5 from car dump or \$5.25 from lighter.

#### CLEVELAND

**Prices forced up by poor car supply. Rush on for Lake coal. Contract prices advancing.**

The car supply the past few days has been about as short as at any time during the past six months, and this has been mainly responsible for increased prices as a great many manufacturing plants, especially steel plants, have not been able to secure their entire contract requirements and have been forced into the open market for enough fuel to keep them running. Other large industries have been in about the same condition, and with a strong demand for coal for reshipment via the Lakes, prices have advanced from 50c. to \$1 over those prevailing one week ago. While no Lake boats have started for the Northwest as yet, a great many of them are waiting to be loaded and there is a strong demand for all grades for this branch of the business.

Contracting is still going on at a lively rate and several yearly contracts were closed the past week at prices ranging from \$3 to \$3.25 net ton, f.o.b. mine, for Pittsburgh No. 8 mine-run. These prices are based on the new mining scale adopted at New York City, and effective on Apr. 16.

A prominent Cleveland operator stated that unless the car supply was greatly improved he looked to have coal go to \$10 per ton by Oct. 1, as figures from the Northwest are to the effect that they will need 35,000,000 tons to carry them over to May 1, 1918, and with the present car supply not over 15,000,000 tons could be shipped during the season of navigation.

Following are the market prices per short ton, f.o.b. Cleveland:

|                  | Three-quarter | Mine-run | Slack  |
|------------------|---------------|----------|--------|
| No. 8.....       | \$4.25        | \$4.25   | \$4.25 |
| Cambridge.....   | 4.25          | 4.25     | 4.25   |
| Middle Dist..... | 4.25          | 4.25     | 4.25   |
| Hocking.....     | 4.00          | 4.00     | 4.00   |
| Pocahontas.....  | 5.00          |          |        |

#### COLUMBUS

**The trade has become stronger as the month advances. Buying for steam purposes is active and prices higher. Future prospects bright.**

Demand for steam purposes is strong and with a shorter car supply there is a general scarcity; as a result prices have reached higher levels and premiums are freely offered. Most of the coal men are still undecided as to the trend of the market since the war has started and are waiting developments.

Steam business continues the leading feature of the trade. Plants making iron and steel products as well as munitions are using a large amount of coal. Other lines of manufacturing are also active and railroads are taking a large tonnage. Because of the general unsettled condition of the market there is little contracting reported. Both producers and consumers are slow to enter into agreements at this time and buying from the open market has been the rule. The entrance of the United States into the war is expected to strengthen the steam trade.

Some attention is being given to the domestic side of the trade, although the season is now practically over. Retail stocks are low but dealers are not anxious to increase them at present unsettled levels. As a result business is being carried on from hand to mouth. Stocking has not yet started but indications point to an earlier stocking season than usual. Retail prices are somewhat unsettled as variation of from 50 to 75c. obtains among various dealers.

The car supply is short on all roads and production throughout Ohio field is rather small. The Hocking Valley, which has been giving the best car supply, is now extremely short of equipment. As a result of these conditions, the output in various fields has been below the average.

Lake trade is now attracting considerable attention and some coal is being shipped from Ohio mines to be loaded on bottoms. Reports from the Northwest show that the shortage of stocks is acute and there will be a lively Lake trade. The opening of the Lake trade is expected to help the car supply.

Prices on short tons, f.o.b. mines, are as follows:

|                         | Hocking | Pomeroey | Eastern Ohio |
|-------------------------|---------|----------|--------------|
| Rescreened lump.....    | \$3.50  | \$3.75   |              |
| Inch and a quarter..... | 3.50    | 3.75     | \$3.50       |
| Three-quarter inch..... | 3.25    | 3.50     | 3.25         |
| Nut.....                | 3.25    | 3.50     | 3.25         |
| Egg.....                | 3.25    | 3.50     |              |
| Mine run.....           | 3.25    | 3.25     | 3.00         |
| Nut, pea and slack..... | 3.00    | 3.00     | 3.00         |
| Coarse slack.....       | 3.00    | 3.00     | 3.00         |

#### CINCINNATI

**Warm weather has softened immediate demand somewhat, but the market is strong and firm, with an advancing tendency. Car supply is slightly better.**

With the warmest weather of the year to mark an end of immediate domestic consumption, the trade remains convinced that higher prices are coming, and prices for next month go to prove this, being 25 to 50c. a ton above April figures. Contracts are closed at higher figures than were offered a month ago, in some instances, and the remarkable fact of the coal trade going into the summer with prices advancing is accomplished.

While there has been a slight improvement in the car supply, which is still the chief factor in the market, coupled with inability of the mines to turn out and forward enough coal to meet demands, there is no sign whatever of any softness in the market, as far as a reduction in prices is concerned. Unless there is such a radical improvement in the car supply during the warm months, and in the volume of production and shipments, as to flood the market, strength seems bound to continue without any yielding whatever.

#### LOUISVILLE

**Advancing prices on strong demand feature Kentucky market; car supply somewhat easier, but labor short. Retail market unusually brisk and contracts slow.**

Stronger prices in the Kentucky market are features of the week, with the tendency upward and the trade looking for further advances. A strong demand on all sides is reported, with numbers of the large operators sold up well into May on steam sizes and very little of these classes seeking buyers. Contracts are lacking almost altogether and one important operator said that he was refusing all contracts offered. A somewhat easier car supply is reported, especially in eastern Kentucky, although western Kentucky operators note less improvement and are making complaints. No improvement is shown in the labor supply, which has been short through the year.

Eastern Kentucky quotes block at around \$4 and mine-run and nut and slack around \$3.75, while western Kentucky quotes lump at \$2; mine-run at \$1.65@1.85, and nut and slack around \$1.50, all prices f.o.b. the mines.

#### BIRMINGHAM

**Production seriously hampered by car shortage, which is rapidly growing more acute, and inquiries have considerably stiffened in the face of depleted stocks in Southern territory. Prices expected to seek higher levels this week.**

Due to the inability of the railroads to furnish equipment for the operation of the mines more than three to five days per week, the production of coal is falling far short of the demand, and practically all users of steam coal are receiving inadequate and irregular shipments. This shortage of cars and the consequent demoralization of the already inefficient organizations at the mines, promises to bring about such chaotic conditions in the trade as existed in the fall of 1916.

While prices have not materially changed as yet, the coming week is expected to see a stiffening in quotations. Spot inquiries have shown a marked increase, prices ranging as follows per net ton mines: Big Seam and Carbon Hill mine-run \$2.75@3; Cahaba, Black Creek and Pratt \$3.25@3.50. One of the largest producers in the district purchased both steam and gas coal for its own use during the past week in the open market, paying \$3 and \$3.50 per ton mines for the respective grades. The "Frisco" Lines contract expired Mar. 31, and failing to meet the figures offered by the operators to cover their requirements, they have been seeking to buy coal in the local market and have been forced to supply this division with Illinois and Kentucky coal. Lots of several thousand tons of medium grade steam coal have been sold at \$3.25 to \$3.50 per ton mines. Blacksmith coal is quoted at \$5 to \$5.50 per ton mines. Domestic inquiry is also brisk, but practically the entire production from this class of mines is sold up through the summer months.

### Coke

#### CONNELLSVILLE

**Better car supplies, but labor supply uncertain. Contracting light. Spot market steady.**

Supplies of cars in the Connellsville region last week were the best for several months, and thus far this week supplies have been good. The market for spot coke is generally regarded as somewhat easier, but when it comes to actual transactions little decline is to be noted. Coke is showing itself to have an intrinsic value, apart from such shortage in supply as is produced by car shortage, and there is no prospect of materially lower prices no matter how fully adequate car supplies may be. With larger supplies of coke the supply of labor becomes a matter of importance.

A contract for 3000 tons monthly of furnace coke over the second half of the year has been made at \$8. This is spoken of in most quarters as a high price but under the test of actual inquiry it is difficult to develop a lower quotation. Some sellers of foundry coke expect to secure \$9.50 or \$10 on contracts by waiting a short time.

There has been a fair movement in furnace coke, furnaces paying \$8 as a rule, but \$8.25 and up to \$8.40 has been paid for particularly desired brands. Brokers have picked up some odd lots at \$7.75 and \$7.50. Spot foundry coke is in better demand than for a couple weeks past, but is not bringing any higher prices. We quote: Spot furnace, \$8@8.25; contract, \$8, largely nominal; spot foundry, \$9.50@10.50; contract, \$8.50@9.25, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the



week ended Apr. 14 at 373,214 tons, a decrease of 5825 tons, and shipments at 372,419 tons, a decrease of 7031 tons.

**Buffalo**—All prices strong, the car shortage setting the price to a great extent, though there would be a shortage of men if cars were to become plenty. Consumers do not buy more than they must, awaiting prices, but they are entirely unable to control the price in any degree. Quotations are \$12.25 for 72-hr. Connellsville foundry, \$9.50 for 48-hr. furnace and \$8.25 for low grades and stock.

**Birmingham**—Inquiries for coke continue strong and conditions are relatively the same as a week ago. Foundry grades are quoted from \$12.50 to \$15 per ton, ovens, and furnace coke from \$7 to \$8 per net ton, ovens, with only a few cars available now and then. The Sloss-Sheffield Steel and Iron Co. will resume operation of the City Furnace beehive ovens, numbering 288, which have been idle for a number of years under city government restrictions, an agreement having been reached for the temporary use of the plant to relieve the company's shortage of furnace coke.

## Middle Western

### GENERAL REVIEW

The market is stronger due to demands for immediate shipments, general increases in costs, and continued shortage of cars.

The market continues very strong, and prices show an upward tendency, which is quite unusual for this season of the year. The anthracite shippers can not begin to satisfy the demand in Chicago and the West, and premium prices are being offered, but at no avail. All grades of bituminous are in demand, the result being that the conditions at the present time are more similar to those existing during the most severe winter weather than in the spring months when as a rule the operators are begging for business. Prices are a secondary matter, and in a great many instances the buyers are willing to accept a substitute due to the scarcity of the higher grade fuels. There seems no question but what prices will be materially advanced shortly, at least 25c. per ton, to take care of the advance given the miners which went into effect Apr. 16.

It is reported that the dock companies are experiencing more or less difficulty in making boat charters. The rate of 30c. per ton applying last year, to the head of the Lakes, is only about half what the rate will be this season. Some of the steamship companies already have refused 50c. per ton, making the claim that the iron ore rate being \$1 per ton, it was cheaper to make the trip up light, saving both time and fuel. The Indiana and Illinois mines are now being called upon to take care of business that heretofore has gone to the dock companies, and there seems no question but what this will continue throughout the spring and summer. The shortage of cars is becoming more acute in Indiana and Illinois, the past week the running time not averaging much better than 50 per cent. The labor supply is also giving the operators some anxiety. In some sections the men are taking up farming, and it is feared there will be a much heavier withdrawal from the mines for that purpose. The adoption of the new wage scale effective Apr. 16, giving the men increases of 10c. per ton for mining, and 60c. per day for shift hands and other day labor, will have a tendency to hold a certain class of workmen; on the other hand, a number of operators are of the opinion that this will not speed up the production, but will give the lazy and inefficient workmen more money to spend with the result that fewer hours will be spent to earn the necessary amount needed to properly enjoy as many holidays as possible.

Shipments from the Hocking Valley field show no improvement over the preceding week, and it is reported that operators on the Hocking Valley Railroad have had only a 30 per cent. car supply.

Eastern Kentucky prices have increased to as high as \$4.50 per ton, f.o.b. mines, and quite a number of the mines are sold up for the next two months. No contracts are being made, but plenty of offers have been tendered.

### CHICAGO

Coal dealers and steam users continue to find the shippers with orders calling for immediate delivery, with the result that this month's business is the heaviest for this season of the year that has ever been experienced. The mines are unable to take care of all the demands, and in many instances are making all acknowledgments of orders read "ruling price at date of shipment," or words to that effect.

The anthracite shippers in Chicago report very little, if any coal moving this way. Premium prices have been offered by the independent shippers, but the big shippers seem to be maintaining prices. No advice has been received as to prices for shipment during the month of May.

The mines in the southern part of Illinois continue to receive more orders than they are able to take care of. The supply of empties has not increased any during the past week, and most of the mines report less working time than any week during the past six months.

In Franklin County, the Old Ben Coal Corporation, has issued a circular reading as follows:

**"A 20 PER CENT. ADVANCE IN WAGES**—In New York, on Apr. 17, at a joint conference of bituminous coal miners and operators, an increase of wages to the Illinois, Indiana, Ohio and Pennsylvania miners was made that will add 20 per cent to the cost of producing every ton of coal after Apr. 16, 1917.

While the conference was notable for patriotic feeling and harmony, the fact remains that one of the heaviest cost additions in the history of the coal trade was the result.

An advance in coal prices will follow—until the coal market adjusts itself to prevailing unusual conditions.

Until such time we can only accept orders at current prices time of shipment."

The Williamson and Saline County operators find conditions the same as in Franklin County. One of the railroads operating in the Northwest came into this market the past week and placed orders for approximately 100,000 tons of coal, shipment the next four months, at prices of \$2.25 per ton for mine-run, and \$2.50 per ton for 2-in. lump or egg, f.o.b. mines. This is the highest price paid to date for coal moving to any railroad.

The market for Springfield district coal is very strong, and prices firm. The car situation shows no improvement, and the demand will easily keep pace with car supply.

Indiana mines are operating about half time due to insufficient supply of cars. Prices show an upward tendency, especially screenings and mine-run, advancing 25 to 50c. per ton.

Pocahontas and splint from West Virginia are being quoted at \$1 above the April circular. Very little of this coal is moving to this market, although there is plenty of demand. Some Arkansas semi-anthracite has found a market in Chicago, the price delivered being about the same as on Pocahontas. If the orders reported placed with Arkansas mines for shipment to Chicago are filled the supply from that source will help to replace the shortage of the Eastern coal.

Eastern Kentucky is not able to supply coal to this market, three of the largest Chicago dealers reporting none of this coal on hand, and prospects not encouraging for delivery any time the coming summer.

Quotations in the Chicago market are as follows, per net ton, f.o.b. cars at mines:

|  | Springfield                | Fulton & Peoria Cos. | Clinton & Sullivan Cos.  | Green & Knox Cos. | Carterville      |
|--|----------------------------|----------------------|--------------------------|-------------------|------------------|
| Domestic lump.....                                 | \$2.50@2.75                | \$2.75@3.00          | \$2.75@3.00              | \$2.75@3.00       | \$3.00@3.25      |
| Steam lump.....                                    | 2.00@2.25                  | 2.50@2.75            | 2.50@2.75                | 2.50@2.75         | 2.50@3.00        |
| Egg.....   | 2.50@2.75                  | 2.75@3.00            | 2.75@3.00                | 2.75@3.00         | 3.00@3.25        |
| Nut.....   | 2.50@2.75                  | 2.75@3.00            | 2.75@3.00                | 2.75@3.00         | 3.00@3.25        |
| Mine-run.....                                      | 2.00@2.25                  | 2.00@2.25            | 2.25@2.75                | 2.75@3.00         | 2.50@2.75        |
| Screenings.....                                    | 1.75@2.25                  | 2.00@2.25            | 2.25@2.50                | 2.00@2.25         | 2.50@2.75        |
|  | Williamson & Franklin Cos. | Saline & Harrisburg  | Poca. & W. Va. Smokeless | Penna. Smokeless  | Eastern Kentucky |
| Lump.....  | \$3.00@3.25                | \$3.00@3.25          | \$4.00@4.50              | 4.00@4.50         | \$4.00@4.50      |
| Egg.....   | 3.00@3.25                  | 3.00@3.25            | 4.00@4.50                | 4.00@4.50         | 4.00@4.50        |
| Nut.....   | 3.00@3.25                  | 3.00@3.25            | .....                    | .....             | 4.00@4.50        |
| No. 1 nut.....                                     | 3.00@3.25                  | 3.00@3.25            | .....                    | .....             | .....            |
| No. 2 nut.....                                     | 3.00@3.25                  | .....                | .....                    | .....             | .....            |
| No. 3 nut.....                                     | 2.75@3.00                  | .....                | .....                    | .....             | .....            |
| No. 1 washed.....                                  | 3.00@3.25                  | .....                | .....                    | .....             | .....            |
| No. 2 washed.....                                  | 3.00@3.25                  | .....                | .....                    | .....             | .....            |
| Mine-run.....                                      | 2.50@2.75                  | 2.50@2.75            | 4.00@4.25                | 3.25@3.75         | 3.75@4.00        |
| Screenings.....                                    | 2.25@2.75                  | 2.50@2.75            | .....                    | .....             | .....            |
| Hocking Lump \$3.50@3.75. Splint Lump \$3.50@3.75. |                            |                      |                          |                   |                  |

Northern Illinois Field—LaSalle, Grundy, Bureau counties.

|                           |             |
|---------------------------|-------------|
| Lump, Egg, No. 1 Nut..... | \$3.00@3.25 |
| Washed Nos. 1 and 2.....  | 3.00@3.25   |
| Washed screenings.....    | 3.00        |
| Mine-run.....             | 2.25@3.00   |

### KANSAS CITY

**Situation causing a great deal of anxiety. Buying becoming urgent. Prices very stiff.**

There is more uneasiness among Kansas City coal buyers than at any time since last summer. Prices are stiffening, and a further advance is looked for in the next week or so. Large users are eagerly seeking for immediate deliveries of coal, offering premiums. In some cases the offers are due to the failure of the companies to deliver coal on contract; in other cases, the buyers are nervous over the future supply and want to get stocks on hand. Offers of cash for as much as 100,000 tons have come from Chicago, but so far as known they have not been accepted by Southwestern operators.

Dealers have not been able to make any contracts this year and some of them are already reported buying coal on the open market to store now for next fall. They are coming to the suggestion made early in the spring that agreements be signed for the delivery of coal at market price, as the only assurance of getting any coal at all. The owners of large buildings, who also are not getting contracts, are in a worse predicament, as they have no storage facilities as a rule.

The Central Coal and Coke Co., one of the largest operators, with a big retail trade in Kansas City, has sent notices to customers of the coal situation, suggesting immediate contracting, delivery at the convenience of the company.

### MILWAUKEE

**Shipping started but no arrivals yet and coal still scarce. Prices advance. Railroads stocking Illinois coal.**

Navigation on the Great Lakes may now be considered reestablished, warm weather and rain having combined to break up the ice in the Straits of Mackinac, the connecting link between the upper and lower lakes. Boats are on the move everywhere, and new supplies of coal will soon be available.

Pending this and until sufficient coal has been docked to relieve the existing stress, soft coal is selling at from \$7.50 to \$8 per ton, the high-water mark of a season which will long be remembered. Hard coal is practically unobtainable. No quotations for future delivery are available as yet, but prices will undoubtedly be fixed after the first consignments of the new supply have been taken care of. Leading dealers are suggesting an advance of 50c. over last year's early quotations, because of the recent advance in wages to mine operatives and also on account of higher freight rates and increased taxes.

Coal-receiving ports on Lake Michigan are facing a serious problem in the securing of supplies sufficient for next winter's needs. Coal-carrying tonnage was scarce last season and it promises to be more so this year. In order to meet this situation, the leading dock company here, which was fortunately protected by charters last season, bought several medium-sized steamers during the past winter.

The Chicago, Milwaukee & St. Paul Ry. has begun to stock up by rail from Illinois mines, instead of trusting to Lake sources for supplies. Ordinarily the company gets from 1,500,000 to 2,000,000 tons of coal by Lake for fall and winter needs. The yards of the Central Coal Co., through which the railway company handles its supplies, have been practically bare of coal for a year, because of failure to secure carrying tonnage last season.

### ST. LOUIS

**Spectacular advance in the market due to car shortage and the awakening of buyers to actual conditions. No Eastern shipments assured. Arkansas sold up and Illinois open market tonnage limited. Steam and Domestic demand good.**

One of the most remarkable advances in the local coal market has been that of the present week. The public and big buyers are beginning to awaken to the real conditions that are con-

|   |   |
|---|---|
| fronting them. Railroads are still buying heavily and quietly, and in some instances paying a trifle more than the operators asked in order to tie up the tonnage in the Standard and Mt. Olive districts.  | Standard coal has jumped from \$1.15 and \$1.20 to \$1.75 and \$2 in the course of one week's time, and indications are that the coming week will see a still further increase. The tonnage offered is limited while the demand is unlimited.   |
| In the Mt. Olive district a heavy railroad demand is taking up what little domestic coal is offered. In St. Louis proper the circular price is from \$1.75@2 for domestic sizes, and then only to regular customers. The country circular is about \$2.50 in limited quantities, with future orders accepted only at prices prevailing at time of shipment. | In the Williamson and Franklin County field, coal in restricted cars was bringing \$2 a week ago, but it is impossible now to buy anything under \$3, and very little offered at that in domestic sizes. The railroads are cutting in heavily on this tonnage and very little domestic is being placed in storage. The April circular of \$3 has been withdrawn entirely, and a limited tonnage offered for this month's shipment at \$3.25 and next month at \$3.50. |
| There has been a general advance of 25c. a ton on all Williamson and Franklin County tonnage because of the increase in wages to miners, and about 20c. a ton in the Mt. Olive and Standard fields.   | Eastern anthracite shippers have cut off entirely all shipments to the St. Louis territory until further notice. The same condition prevails on West Virginia smokeless tonnage, and this week  |

Arkansas operators notified their St. Louis trade that they were sold up until after the middle of summer.

The situation at this time appears critical for the usual tonnage demanded by St. Louis proper, let alone the country trade.

There is practically no contracting done here excepting with railroads for short periods. In some instances these railroads have agreed to pay \$2 a ton for Standard mine-run at mines for the next two or three months and furnish the equipment. One or two other contracts have been made for railroad egg, which is about 2x6 in. at prices ranging from \$2.25 in April and May to \$2.65 and \$2.75 for July and August. Some Standard 2-in. lump is contracted for railroad purposes at \$2.50.

Practically no contracts have been made in the Mt. Olive field, except on screenings at \$2.50, and some lump for the railroads at from \$3 to \$3.25. A few contracts have been closed in the Williamson and Franklin County field at \$3.50 for steam egg.

Operators are refusing to contract except where their previous contracts call for renewals.

The prevailing circular at St. Louis per net ton f.o.b. mines is about the same as that applying in the country, and is:

|                 | Williamson and Franklin Co. | Mt. Olive and Staunton | Standard  |
|-----------------|-----------------------------|------------------------|-----------|
| 6-in. lump...   | \$3.00@3.25                 | \$2.00                 | \$1.75    |
| 3x6-in. egg...  | 3.00@3.25                   | 2.00                   | 1.75      |
| 2x3-in. nut...  | 3.00@3.25                   | 2.00                   | 1.75      |
| No. 2 nut...    | 3.00@3.25                   |                        |           |
| No. 3 nut...    | 3.00@3.25                   |                        |           |
| No. 4 nut...    | 2.50                        |                        |           |
| No. 5 nut...    | 2.50                        |                        |           |
| 2-in. screen... | 2.50                        | 2.00                   | 1.50@1.75 |
| 2-in. lump...   |                             |                        | 1.50@1.75 |
| 3-in. lump...   |                             | 2.00                   |           |
| Steam egg...    | 3.00                        | 2.00                   | 1.50@1.75 |
| Mine run...     | 2.75                        | 1.75                   | 1.50@1.75 |
| Washed          |                             |                        |           |
| No. 1...        | 3.25                        | 2.25                   |           |
| No. 2...        | 3.00                        | 2.00                   |           |
| No. 3...        | 3.00                        | 2.00                   |           |
| No. 4...        | 2.75                        | 2.00                   |           |
| No. 5...        | 2.50                        | 1.75                   |           |

Rate on Williamson and Franklin County is 72½c. Rate on other fields is 57½c.

## General Statistics

### NORFOLK AND WESTERN

Destination of shipments over this road for February and the first two months of last year and this year were as follows, in short tons:

| Coal        | February 1916 | February 1917 | Two Months 1916 | Two Months 1917 |
|-------------|---------------|---------------|-----------------|-----------------|
| Tidewater   |               |               |                 |                 |
| Foreign...  | 239,320       | 158,014       | 425,815         | 358,496         |
| Coa'w'se    | 297,508       | 249,143       | 651,468         | 489,429         |
| Dom'tic     | 2,052,505     | 1,827,115     | 4,200,839       | 4,231,932       |
| Coke        |               |               |                 |                 |
| Foreign...  | 167,857       | 175,150       | 320,577         | 379,133         |
| Domestic... | 6,198         | 5,642         | 9,826           | 8,536           |
| Total...    | 2,763,388     | 2,415,064     | 5,608,525       | 5,467,526       |

### IMPORTS AND EXPORTS

The following is a comparative statement of coal imports and exports of the United States for February, 1916-17, and for the 2 months ended February, 1915-16-17, in long tons:

| IMPORTS                          | February 1916 | February 1917 | 1915       | 2 Months 1916 | 1917       |
|----------------------------------|---------------|---------------|------------|---------------|------------|
| Anthracite, total...             | 5             | 75            | 12,125     | 7,129         | 1,438      |
| Bituminous, total...             | 158,441       | 115,607       | 959,549    | 1,113,188     | 922,413    |
| United Kingdom...                | 879           | 836           | 27,270     | 6,238         | 2,273      |
| Canada...                        | 147,836       | 107,988       | 742,500    | 967,802       | 841,302    |
| Japan...                         | 5,850         | 5,674         | 64,201     | 60,420        | 59,696     |
| Australia...                     | 3,876         | 1,049         | 124,131    | 77,917        | 17,472     |
| Other countries...               |               | 60            | 1,447      | 811           | 1,670      |
| Coke...                          | 3,812         | 1,289         | 74,791     | 36,889        | 18,881     |
| EXPORTS                          |               |               |            |               |            |
| Anthracite total...              | 293,451       | 254,585       | 2,326,136  | 2,384,322     | 2,652,950  |
| Canada...                        | 289,602       | 250,768       | 2,286,289  | 2,286,602     | 2,597,489  |
| Argentina...                     |               | 1,074         |            | 1,931         | 2,684      |
| Brazil...                        |               |               | 6          | 2,472         | 1,343      |
| Uruguay...                       |               |               |            | 600           |            |
| Other countries...               | 3,939         | 2,743         | 39,841     | 92,717        | 51,343     |
| Bituminous total...              | 1,041,920     | 997,226       | 9,269,786  | 12,387,679    | 12,699,627 |
| Italy...                         | 161,614       | 52,871        | 634,589    | 2,054,193     | 854,750    |
| Canada...                        | 540,789       | 571,348       | 6,307,734  | 6,657,230     | 8,082,039  |
| Panama...                        | 34,498        | 54,938        | 170,797    | 358,643       | 347,599    |
| Mexico...                        | 24,270        | 22,478        | 271,054    | 142,781       | 124,275    |
| Cuba...                          | 87,486        | 124,783       | 670,974    | 805,502       | 912,833    |
| Other West Indies and Bermuda... | 51,988        | 32,286        | 277,397    | 410,723       | 317,646    |
| Argentina...                     | 21,545        | 29,799        | 184,393    | 421,925       | 589,367    |
| Brazil...                        | 45,142        | 56,993        | 230,188    | 379,690       | 516,595    |
| Uruguay...                       | 4,049         |               | 30,494     | 97,264        | 81,454     |
| Other countries...               | 70,179        | 51,730        | 492,166    | 1,059,728     | 871,069    |
| Total coal...                    | 1,335,461     | 1,251,811     | 11,595,922 | 14,772,001    | 15,352,577 |
| Coke...                          | 88,115        | 79,099        | 343,450    | 617,788       | 673,947    |
| Bunker coal...                   | 536,513       | 539,866       | 4,452,363  | 4,936,815     | 5,278,651  |

### EXPORTS BY DISTRICTS

Exports of domestic coal and coke from the United States and bunker coal laden on vessels engaged in the foreign trade, at the specified districts, during the month of February, 1917, were as follows:

| Districts           | Anthracite | Bituminous | Coke   |
|---------------------|------------|------------|--------|
| Maine and N. H.     | 371        |            | 27     |
| Vermont             | 999        | 20,418     | 2,381  |
| Massachusetts       | 116        |            |        |
| St. Lawrence        | 45,758     | 95,646     |        |
| Rochester           | 7,057      | 45,558     | 2,834  |
| Buffalo             | 189,367    | 279,972    | 36,036 |
| New York            | 4,981      | 1,731      | 1,211  |
| Philadelphia        | 1,690      | 77,223     |        |
| Maryland            |            | 21,115     | 2,182  |
| Virginia            |            | 309,177    | 5,038  |
| Mobile              |            | 897        |        |
| New Orleans         | 40         | 765        | 70     |
| Laredo              |            | 4,272      | 4,218  |
| El Paso             | 40         | 8,819      |        |
| Eagle Pass          |            | 1,963      | 771    |
| Arizona             |            | 6,137      | 13,047 |
| Southern California | 9          | 15         | 186    |
| San Francisco       |            |            | 1,271  |
| Washington          |            | 2,232      | 2,124  |
| Dakota              | 2,747      | 4,004      | 106    |
| Duluth and Superior | 1,409      | 5,697      | 80     |
| Michigan            | 1          | 111,583    | 7,517  |
| Porto Rico          |            | 2          |        |
| Total               | 254,585    | 997,226    | 79,099 |

### BUNKER COAL

|              | Gross Tons |
|--------------|------------|
| Maryland     | 25,043     |
| New York     | 237,008    |
| Philadelphia | 30,964     |
| Virginia     | 156,059    |

### NORFOLK & WESTERN

The following is a statement of coal handled by the N. & W. Ry. during March and the preceding two months in short tons:

|               | January   | February  | March     |
|---------------|-----------|-----------|-----------|
| Pocahontas    | 1,428,291 | 1,161,688 | 1,388,854 |
| Tug River     | 324,236   | 277,597   | 295,175   |
| Thacker       | 279,944   | 236,094   | 273,483   |
| Kenova        | 89,595    | 66,388    | 76,211    |
| Clinch Valley | 162,687   | 118,450   | 131,487   |
| Miscellaneous | 21,273    | 9,179     | 10,272    |
| Total N. & W. | 2,306,026 | 1,869,396 | 2,175,482 |

|                    |         |         |         |
|--------------------|---------|---------|---------|
| Wim. & Pond Ck.    | 124,030 | 110,530 | 128,198 |
| Tug. R. & Ky. R.R. | 55,312  | 49,138  | 51,511  |
| Other roads        | 322,788 | 175,106 | 241,864 |

Grand total..... 2,808,156 2,204,170 2,597,055

## I. C. C. Decisions

No. 4408, Tampa Fuel Co. vs. Atlantic Coast Line Railroad Co. et al. Submitted Sept. 27, 1913. Decided Feb. 20, 1917.

Handling and wharfage charges imposed by defendants at Port Tampa, Fla., on shipments of coal from north Atlantic ports to Tampa, Fla., found to have been unreasonable. Reparation awarded.

Investigation and Suspension Docket No. 756. Coal to Glencoe, Mo. Submitted Sept. 14, 1916. Decided Mar. 13, 1917.

Former finding that respondents had justified proposed increased rates on bituminous coal in carloads from mines on the St. Louis, Iron Moun-

tain and Southern Railway, in Illinois to stations on the Missouri Pacific Railway, in Missouri, affirmed on rehearing.

Investigation and Suspension Docket No. 862. Johnstown, Penn., Switching. No. 8956. Valley Smokeless Coal Co. vs. Pennsylvania Railroad Co. Submitted Nov. 2, 1916. Decided Apr. 3, 1917.

1. Proposed increase in through rates on coal from mines on the Johnstown & Stony Creek R.R., within the Clearfield district, to eastern destinations, found not justified.

2. Refusal of the defendants to apply the Clearfield district rates to eastern interstate destinations on coal from mines served by the Johnstown & Stony Creek R.R., while extending such rates to other mines generally throughout the Clearfield district, found to result in undue prejudice and disadvantage to complainants.

3. Defendants required to extend the Clearfield district rates to apply from mines of complainants by means of absorption or joint rates which shall not exceed the existing Clearfield district rates to eastern interstate destinations.

4. Reparation awarded.

No. 8622. La Crosse Shippers' Association, for Cargill Coal Co. vs. Chicago, Milwaukee & St. Paul Ry. Fourth Section Applications Nos. 39 and 2874. Submitted Oct. 17, 1916. Decided Apr. 2, 1917.

1. Rates on bituminous coal in carloads from various producing points in West Virginia to La Crosse, Wis., not shown to be unreasonable, unjustly discriminatory, or unduly prejudicial.

2. Carriers authorized to continue and to establish the same rates on bituminous coal from certain Lake Michigan ports to Eau Claire, Chippewa Falls, Menominee Junction, and Menominee, Wis., as are in effect from Duluth, Minn., to the same destinations, and to continue higher rates to certain intermediate points on their lines, provided that the rates to intermediate points from Lake Michigan ports shall not exceed the rates on like traffic from Duluth and that present rates to said intermediate points are not exceeded.

3. Rates on bituminous coal in carloads from various producing points in Illinois and from St. Louis, Mo., and points taking the same rates to La Crosse, Wis., found to have been justified by defendants.

4. The requirement of a differential between screenings and other sizes of bituminous coal not found to be justified.

## Foreign Markets

### GREAT BRITAIN

Apr. 5—The market still remains inactive at round about prices last quoted, although for prompt positions a discount of 12c. to 24c. could probably be secured.

|                     |             |
|---------------------|-------------|
| Best Welsh steam    | Nominal     |
| Best seconds        | Nominal     |
| Seconds             | \$6.00@6.24 |
| Best dry coals      | 5.76@6.00   |
| Best Monmouthshires | 6.00@6.24   |
| Seconds             | 5.52@5.76   |
| Best Cardiff smalls | 4.08@4.32   |
| Cargo smalls        | 3.60@3.84   |

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport, both net, exclusive of wharfage.

Freights—Tonnage is still scarce, and the tendency of freights in all directions is upwards.

|            |         |             |         |
|------------|---------|-------------|---------|
| Gibraltar  | \$19.20 | Port Said   | \$26.40 |
| Marseilles | 21.00   | Las Palmas  | 18.00   |
| Genoa      | 24.30   | St. Vincent | 19.20   |
| Naples     | 23.58   | River Plate | 24.00   |
| Alexandria | 27.00   |             |         |

## Financial Notes

### PENNSYLVANIA COAL AND COKE CORPORATION

Earnings of this company for the past two years compare as follows:

| Years | Gross Sales  | Net Earnings     | Other Income  |
|-------|--------------|------------------|---------------|
| 1916  | \$4,430,451  | \$181,674        | \$53,092      |
| 1915  | 2,961,900    | 33,148           | 110,456       |
| Years | Depreciation | Balance, Surplus | Total Surplus |
| 1916  | \$78,030     | \$156,736        | \$1,493,808   |
| 1915  | 63,457       | 80,139           | 1,337,071     |

The company's gross tonnage mined for March, 1917, was 291,127 gross tons, with a cash gain of \$133,222, and the gross tonnage for the three months ended Mar. 31, 1917 aggregated 776,680 tons, with a net cash gain of \$275,576.